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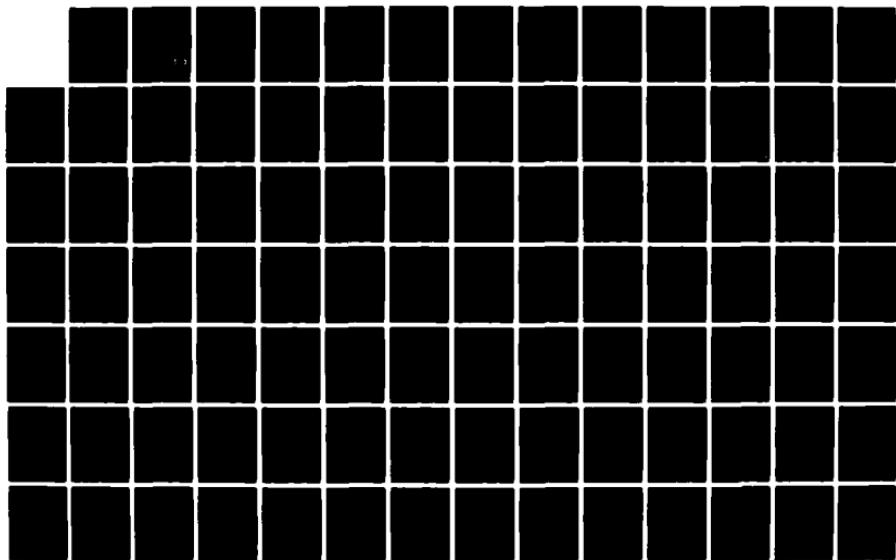
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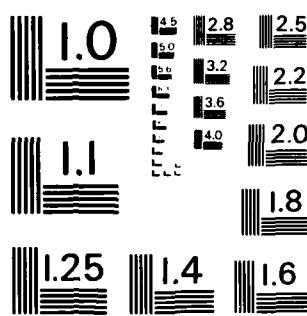
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GEORGIA STATE UNIVERSITY  
COLLEGE OF BUSINESS ADMINISTRATION

AN ANALYSIS OF THE FULTON INDUSTRIAL  
AREA: A MARKET FOR PARKWAY'S INDUSTRIAL  
MEDICINE PROGRAM

by: C. Richard Dwozan  
Thomas D. McKinney  
Andrew W. Tatnall  
Roy T. Wise

A PAPER SUBMITTED IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS OF  
THE INSTITUTE OF HEALTH ADMINISTRATION

Max G. Holland, Ph.D.

ATLANTA, GEORGIA

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## CHAPTER I

### OVERVIEW OF OCCUPATIONAL HEALTH

Business and industry in this country are finding it increasingly difficult to justify the high cost of providing medical care benefits to its employees. As the costs of supplying medical care to the public grows, so too does the cost of premiums for health insurance or the cost of direct reimbursements. Business has realized that, in addition to the direct costs, there are the indirect costs associated with absenteeism, low productivity, and premature death of its employees.

As a response to this problem, business has turned its attention to occupational health and health promotion programs that specifically address both the causes of the direct and indirect costs. The intensity of this interest varies with each company, from desiring to maintain the status quo (despite the chance that profitability is diminished) to pursuing a more progressive approach. This latter approach is gradually finding more proponents as each company seeks to find a health care program which fits the needs of the employee and the employer.

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## CHAPTER I

### OVERVIEW OF OCCUPATIONAL HEALTH

Business and industry in this country are finding it increasingly difficult to justify the high cost of providing medical care benefits to its employees. As the costs of supplying medical care to the public grows, so too does the cost of premiums for health insurance or the cost of direct reimbursements. Business has realized that, in addition to the direct costs, there are the indirect costs associated with absenteeism, low productivity, and premature death of its employees.

As a response to this problem, business has turned its attention to occupational health and health promotion programs that specifically address both the causes of the direct and indirect costs. The intensity of this interest varies with each company, from desiring to maintain the status quo (despite the chance that profitability is diminished) to pursuing a more progressive approach. This latter approach is gradually finding more proponents as each company seeks to find a health care program which fits the needs of the employee and the employer.

The term "occupational health" has not, until recently, been a standard in medical terminology. The evolution of this area of medicine perhaps became first known as industrial medicine when a growing number of job-related diseases became evident in Europe and the United States in the 1800's. The most familiar example of these job-specific maladies was black lung disease found in coal miners (10:14). Out of observing workers in other types of jobs, it was found that industrial disease need not be limited to one particular industry or job. Rather, illness and disease caused by the work place crossed many boundaries into many different occupations, creating the expanded term "occupational medicine".

Occupational health, a more comprehensive area which includes occupational medicine, is now used as a term to describe the total health needs of all workers. The Occupational Safety and Health Act (OSHA) and the Toxic Substances Control Act (TSCA), government's responses to the need for regulation of health hazards to the worker, were perhaps the most monumental catalysts for creating occupational health programs. There continues to be much debate as to what services an occupational health program should contain. One thing seems evident, no one program can solve the health needs of all companies. Rather, each program is best designed which takes into account the varied needs of each company, management's philosophy on the need and use of an occupational health program, and the resources available from the provider of the occupational health program.

During the last two decades the predominating area of medical care has been altered as treatment of infections and communicable diseases has been replaced by treatment of the chronic illnesses heart diseases and cancer. Extensive research in the area of chronic disease indicates a close correlation between personal lifestyle, environment, and related hazards. As businesses seek to provide better care for their employees, emphasis will be placed on encouraging an environment of health, both in the workplace and in daily living. Business and industry is coming to understand the long-range implications and cost savings that will become evident by stressing the program. Occupational health will emphasize the prevention of the need for medical care before the need arises.

#### STATEMENT OF THE PROBLEM

Health care providers are finding that to remain competitive in the marketplace, maintaining the status quo is not enough. Many providers have discovered the need to expand the services offered to their respective communities as a means to facilitate a continuing supply of patients. Demand analysis of the service is necessary before an expansion of services is undertaken. Analyzing the surrounding community for what need exists or is anticipated to exist is the best means of designing a future service to be provided.

### Objectives of the Research Project

The task of the research group is to take a specific look at how one hospital, Parkway Regional Hospital, might design a service that will cater to the needs of a subset of its service area and to serve the need for an additional patient flow facilitator. The research project shall survey the industrial and business community and thereby define the target market, recommending such factors as market segmentation, service, pricing, accessibility, and promotional efforts. This subset of the market was determined to provide the greatest opportunity for expansion due to the existence of several industrial parks and the small number of providers that are currently servicing the needs of the industrial community.

The new service should be beneficial not just to Parkway Regional Hospital in terms of increased demand for both ancillary and in-patient services. It will also be of benefit to the community, both residents and those employed in the area, with improved health programs, health education and employee assistance programs. Finally, the employers in the community will benefit with an increase in the health status of their employees, an improved level of productivity, and a decrease in the direct and indirect costs of providing medical care to employees.

### Research Goals

For a thorough survey to be done on the targeted market, a number of goals were established in order to recommend the

best program(s) for Parkway Regional to implement. Specifically these goals were:

- (a) Define the product through a review of existing literature and information.
- (b) Develop and utilize a survey instrument which would adequately define the needs and attitudes of the business community. Such an instrument would be detailed so as to provide enough data for proper analysis yet not so lengthy as to deter responding to the questionnaire.
- (c) Submit a report to Parkway Regional Hospital offering a comprehensive review of the subject, an interpretation and analysis of the data received, and provide pertinent information resulting from the data. The essence of the report would include a thorough recommendation for the course of action that the hospital shall pursue in providing an occupational health program to the community.

#### Research Questions

In addition to the goals and objectives of this research project, the following questions were identified as ones to seek answers to in designing the research methodology:

- (1) How should occupational health, wellness, and health promotion be defined for Parkway Regional?
- (2) What are the needs of the medical staff and support personnel at Parkway Regional? Will these needs be congruent with the needs expressed by the business community? What specific services are the medical staff prepared to offer in support of this program?
- (3) What level of interest and particular needs do each of the companies have relative to occupational health, wellness, and health promotion? How does the demographic breakdown of the businesses influence the type of services desired?

- (4) What services are currently available to the industry, either from the hospital or competing clinics in the area? If such are found to exist, what services may be competed in successfully?
- (5) Who may be identified as the industrial/business customers and how many segments within the business community may be defined? Should Parkway Regional serve all these segments or just a selected few?
- (6) Once the target markets are identified and a program for Parkway Regional has been designed what method for implementing, marketing, and promoting would be the most feasible?

#### LITERATURE REVIEW

Realizing the complexity of the problem, a number of approaches to information-gathering and problem definition were undertaken. Probably the most beneficial approach to understanding the task was through a review of the current literature. Utilizing formal library sources, research findings, presentations and personal communications, we attempted to incorporate a wealth of subject matter into this introductory chapter. The purpose was to compile information germane to the specific problem in order to arrive at a working definition of what areas may be included under "occupational health programs" and to define specific terminology that will be used throughout the problem-solving process.

Preliminary review of documents, articles, and texts lead to seven areas that needed definition and presentation. These seven areas are general categories that will be further addressed in describing the research methodology, data interpretation, and the recommendations arrived at by the research group.

## I. EXAMINATION/EVALUATION

Perhaps the most fundamental service or services of an occupational health program are those services that fall in the category of examination and evaluation. In addition to the traditional physical exam, businesses have found the need for such additions as: preplacement exams, pre-employment exams, executive exams, periodic exams, dependent's exams, and back-to-work evaluations.

### Pre-employment and Preplacement Exams

In any evaluation of an employee's health, a thorough medical history is the first step to providing a comprehensive examination. Other standard components would include a complete blood count, stool guaiac, urine analysis, and a 12-lead scalar electrocardiogram. Further tests may be requested but should be scrutinized, as in the case of the chest x-ray, for more potential harm than value received. Due to the fact that more than 85% of all clinical diagnoses are based on the medical history and physical exam, completeness and accuracy of the evaluation are essential (53:17).

While both pre-employment and preplacement exams are based on the same format of tests, the use of each exam does vary in the industrial setting. Pre-employment examinations are typically done on an employee prior to formal employment, either before the job offer has been made or serves as a condition of being permitted to begin work. Depending on the environment that the

new employee will be working in, the exam assures that he/she brings no hazardous health risks into the work environment which will affect the organization. Likewise, the medical history will indicate what health-related conditions the new employee will bring to the workplace and any future implications of the condition.

A preplacement exam is an episodic screening done to evaluate the physical condition and any health limitations of the employee upon job placement. The exam may be given prior to placement for the first time or, and more importantly, after an illness or injury that may have affected the employee's ability to maintain the same job activities. An example of this exam would be on an employee who suffered a severe back injury and, upon examination, was determined to be unable to work in a position which requires lifting or other strenuous activity.

#### Executive Examination

A rather extensive exam, the executive physical is typically used to detect illness in the early stages among upper management and to encourage health promotion. As more organizations realize the important aspect of healthy executives, these examinations are becoming almost a required perquisite to insure continued success of the company. In addition, many life insurance policies on these executives will require such a periodic examination.

Using the medical history and standard components of a routine exam (mentioned earlier) as a base, the executive physical will include a battery of additional tests. The most common tests

would include complete blood and urine component analyses, cholesterol-level measurement, random blood sugar, sedimentation rate, blood urea nitrogen analysis, 12-lead electrocardiogram, PA and lateral chest x-ray, and a sigmoidoscopic examination (34:64). Once the work-up has been completed and sent for analysis, the physician will meet with the executive to discuss the personal health habits and lifestyle of the individual as it pertains to their health. The final phase of the exam, a summary interview, evaluates three factors (59:45):

- (a) whether the executive has any existing health problems;
- (b) an analysis of the individual's lifestyle and health habits with recommendations to leading a healthier life;
- (c) a determination regarding the existence of any tumors or abnormal growths.

The frequency of these examinations will vary with the age of the executive: as age progresses the signs of physical abnormalities will increase. One recommended guide is (59:44):

- (1) less than 40 years old - once every 3 years.
- (2) 40 to 50 years of age - every other year.
- (3) over 50 years of age - annually.

Perhaps the most important aspect of the executive examination is the level of acceptance by the patient of their health status. No exam may be, in the least, effective if it does not supplement the results with a mechanism for encouraging the individual to pursue a health inducing life-style. One

recommended means of motivation is to forward the report of the examination to the patient's personal physician and the personnel department of their company (33:63). Further, it is recommended that the executive be required to see the examining physician periodically to follow up on the progress made toward the recommendations. If the executive program is to be a comprehensive one it must not only induce the executive to submit to the exam but it must motivate he/she to act on the recommendations.

#### Periodic Examinations

The status of an employee's health continues to change and the initial pre-employment or executive physical should not be the only monitor. The evaluation must be an ongoing process to ensure that pre-existing conditions do not worsen nor that new health problems evolve. Such occurrences may or may not be work-related but must not adversely effect management's decision to provide for their employees. The long-range consequences may prove costly.

Periodic examinations have traditionally been little more than routine physical exams with no emphasis on specific health problems. As specific illnesses and diseases have been identified as costly in terms of dollar expenditures and human lives, the periodic exam has taken on a new meaning. Three specific areas that will be discussed: hypertension, audiology, and radiologic screening, have come under a good bit of scrutiny as to their cost versus benefit.

Treatment of hypertension, a chronic health condition leading to most cardiovascular problems, is currently being administered in the private office of the physician and in the ambulatory hospital facilities in each community. Another setting that has found some support, largely due to the increased efforts to control heart disease, is the worksite. Advocates of worksite treatment feel the total cost per patient at such a facility is well below that of the other treatment locations. (43:795)

Furthermore, the dollar cost of care was found to decline over the initial three year period and to stabilize in the fourth and subsequent years of operation. While set up for the treatment mode, such a program may also serve to screen and detect for existing hypertension.

The increased cost efficiencies, presuming that effectiveness of treatment is the same, of the worksite program are many. The administering of care is handled by trained nursing personnel, under the direction of a physician or medical director. Other cost-saving measures include wholesale purchase of drugs, lower overhead through use of preexisting space that is unused in the workplace, and no costs for billing the patient as it is handled through each company (43:399). Accessibility for treatment is another positive aspect as the patient need not spend the time going to a treatment site apart from the workplace.

Periodic evaluation for hearing health has become more strongly advocated with the passage of the Occupational Safety and Health Act (OSHA). While some employers had developed their own

programs of audiometric screening, OSHA specifically established criteria for an ongoing and effective hearing conservation program (26:38). Such a program was not only to be made up of periodic audiometry tests, a process of identifying and charting the progression of hearing loss. The program must also take such data, interpret it into meaningful information, and pursue an aggressive program of preventing the growth of occupational hearing at the lowest cost possible (26:39). Follow-up of each case of hearing loss is the key ingredient, thus necessitating the periodic evaluation.

The routine x-ray examination, particularly of the chest, was touted as the means of disease prevention in the early field of industrial medicine. It was not until the late 1950's and early 1960's that these periodic exams came under increased scrutiny. With discovery of the adverse effects of continued exposure to x-rays, such a practice of periodic screening was reevaluated as to the intangible cost versus benefit.

Chest x-ray exams are typically performed in preemployment evaluations, in making appropriate job placements, and in surveillance of employees coming in contact with pulmonary irritants or carcinogens (2:18). Health screening by chest x-ray is utilized for detection of tuberculosis and lung cancer. The debate on the effectiveness of such periodic screening centers around whether it need to be applied to all employees across the board as routine procedure. A growing belief is justification for

periodic chest x-ray exams lies only with selected "high-risk" groups (2:19).

OSHA has found the need to intervene in this continuing debate. Recognizing that many unnecessary x-ray exams are being performed, certain guidelines have been issued. In 1981, OSHA required routine x-ray exams for persons exposed to: acrylonitrile, arsenic (inorganic), asbestos, coke oven emissions, and persons employed as divers. Furthermore, x-ray exams were recommended for persons exposed to vinyl chloride and those employees needing to wear a respirator (2:19). Justification for any other x-ray exams was only as a last resort and to rely on requesting x-rays where existing films were available (perhaps from other physicians) instead of taking new ones.

Preemployment back x-rays was another examination that came under scrutiny. As a matter of routine, the exam was only justified when preexisting abnormalities of the spine predisposed the employee to increased low back injury or disablement (21:501). However, analysis of data which compares symptomatic to control groups revealed the incidence of compensation claims for lower back injury could not be tied to these abnormalities (37:495). Having the basic reasoning for back x-ray exams unsubstantiated, a committee of the American Occupational Medical Association recommended that lumbar spine x-ray exams be used only as a special diagnostic procedure when indications gave appropriate justification for its specific and non-routine use (21:502).

#### Dependents Examinations

The employee is not the only consideration in developing a comprehensive health program. Most programs and coverage benefits provide for the care of the employee's dependents as well. The dollar cost of providing health care to the other family members usually accounts for a larger percentage of the benefit than management usually recognizes.

The need for preventative evaluations is certainly dictated by the cost of medical care alone. In any examination/screening program, provision for the employee's dependents health must be included in such a program. An evaluation as to what the family members needs are, their accessibility to the program, and what sharing of the cost per exam will be possible must be taken into account in designing the health examination program.

#### Back-to-Work Evaluations

While the emphasis throughout this discussion has been placed on preventing illness and disease, the inevitable is sure to happen periodically. When any employee is absent for a period of time due to illness or accident, an evaluation must be made as to his/her condition before being allowed to return to work.

Differing from the preemployment and preplacement exams, the back-to-work evaluation will concentrate of the employee's health as it was affected by the specific incident. The evaluation will be one assurance that the employee's condition is back to normal or at least will not impair the performance on the job. The lack of such an evaluation will undoubtedly lead to future health complications and increased claims for worker's compensation.

## II. HEALTH SURVEILLANCE

The safety and health of the employee in today's workplace has certainly benefitted from increased awareness and attention given to them by management and government. Recollecting the conditions of the early stages of industrial Europe and America, it was little wonder that expected longevity was no greater than 50 years and that levels of illness, injury, and death were acutely high for those in the industrial environment. The need for comprehensive programs in health monitoring and proven standards of comparison was just beginning to be addressed when the federal government enacted its own means of ensuring surveillance.

### Occupational Safety and Health Act of 1970

The enactment of OSHA was the first step in a long and continuing effort to impose mandatory, as well as voluntary, standards upon all businesses for the benefit of the worker (and, some explained, for business too). Originally addressing the need for safety measures through issuance of standards, OSHA administrators enforced their compliance, conducted statistical surveys of injuries, and developed training and educational programs (55:14).

The need to address the health of the worker was dealt with through OSHA's parallel organization - the National Institute of Occupational Safety and Health (NIOSH). NIOSH was charged with investigating health hazards of the work environment, undertake

experimental research of the hazards, and to develop criteria and recommendations for OSHA's standards (30:690).

The federal agency realized there was a prevalence of health and safety problems in the workplace and some means of prioritizing them was needed. NIOSH viewed the exposure to asbestos as one immediate area of concern and OSHA followed with feasible standards. The standards were developed on the basis of accepted scientific truth and a proven degree of hazard and, therefore, the limits of exposure and standards for monitoring were acceptable to the business community (30:690). An area next addressed was the need to prevent noise-induced hearing loss and subsequent standards were also based on scientific analysis. In 1974, evidence quickly mounted towards vinyl chloride being a human carcinogen to which OSHA enacted effective controls. NIOSH continued to establish priorities for more problems to be addressed on the basis of toxicity and population at risk (39:444).

The selection criteria for determining such a priority are (39:447):

- a. Exposure patterns  
(i.e. number of workers, duration, level of exposure, existence of multiple exposures);
- b. Chemical/Physical properties  
(i.e. physical state, volatility, chemical stability and reactivity);
- c. Biological effects  
(i.e. toxicity both chronic and acute, organ systems effected);

d. Production/Use trends  
(i.e. extent of, method of, probability  
of continued use);

e. Need for new or revised exposure standard.  
(See Table 1 for a partial list of the hazards  
that have been identified as of 1982.

OSHA and NIOSH, in their efforts to continue fulfilling their given tasks have come under a great deal of criticism in recent years. While many advocate and support the continuing good that these two agencies have contributed to the health and safety of the American worker, concern over methodology, enforcement, and the cost for both government and business are being addressed. NIOSH has been criticized for the methodology of developing their priorities for further study. OSHA has been criticized for inefficient utilization of resources in an effort to enforce the law, for not considering costs versus benefits in developing their standards, and for the antagonistic rather than helping attitude that has prevailed under OSHA enforcement (56:428). Criticism notwithstanding, OSHA and NIOSH have contributed one important fact to business and industry: pursuing uniform and comprehensive guidelines for individual businesses to base their own programs of health monitoring and safety evaluation.

Health and Hazard Surveillance Systems in the  
Workplace

Local businesses must not depend on the federal government to mandate what steps must be taken in their respective work environments. Rather, they must develop their own system to continually monitor incidence of injury and illness to identify high risk

areas. Business has realized, to some extent, the importance of preventative surveillance and monitoring much before OSHA came into existence (56:427). Surveillance systems have become much more effective in delineating injury, accident, and illness problems so that quick action may be taken to decrease injuries and losses.

The basis for any health surveillance system is to detect any change in health status of each employee and of the group that may be job-related. The key word, change, denotes the need to measure at least two points in time and to provide a system which has (50:35):

- a. base line data on the new employee's health status;
- b. data on the type of work performed and accompanying exposures;
- c. data on significant changes in the health status both during and following employment.

All the data must be collected, periodically collated, and analyzed to determine variations from the norm.

To encompass all these requirements, this continuous and systematic process should be developed around four key functions (51:50):

1. Collection of relevant data for specific population. Typically done through a log of daily visits indicating employee's name, department, and description of accident or purpose for visit.

2. Consolidation of data into tables, charts, and/or graphs. The CDC has recommended tabulation of injuries by person, place, and time. The meaningful presentation of such data will reveal information such as number and type of each injury, number of cases with lost time, or body part injured.
3. Analysis and interpretation of data by comparing current statistics with the norm, identifying the change and assessing its significance. Normal values may be industry-specific rates or those in the local area that may be applicable.
4. Dissemination of data and relevant information for control of the problem to be initiated. The dissemination may be limited to internal operations or distributed to external agencies (OSHA, for instance) and industry associations.

Through this mechanism, the identification of high risk areas, unsafe or unhealthy departments may be identified. To determine the need for and type of control measures, for educational programs, and for reevaluation of staffing patterns, identification is the first step (51:53).

The validity of any surveillance system rests largely with knowing the whole truth from the individual employees. To assure this truthfulness the monitoring system must be carried out through a department that is apart from the normal line relationship. The confidentiality of the employee's information must be maintained (50:56). For this reason, it is recommended that such a program be administered through the in-house medical department or an "independent" group not subject to management's biases.

### III. CLINICAL SERVICES

Clinical services is synonymous with what traditionally was referred to as industrial medicine. This is the segment of comprehensive health management programs that is concerned with physical examinations and care for workers who become ill or injured on the job. Most industrial areas have coverage for needed clinical services.

Numerous groups provide clinical services making competition stiff. Some providers include private physicians, private clinics (often located in the industrial park), mobile vans, circuit nurses, emergency rooms, and other outpatient facilities (10:14).

Hospitals planning to offer clinical services must develop a delivery system and select a location that provides immediate attention to ill or injured workers. Planners must define "immediate" based on competition, available resources, and attainment of good insurance experience rating.

#### Models

One of several basic models may meet the need of industry and the hospital. Industry is interested in cost reduction or containment while hospitals are interested in alternate revenue sources.

One basic model that may be offered is to offer preemployment exams, executive physical exams, and acute medical care through existing outpatient services and emergency rooms. This model may be inadequate if the competing provider is more convenient.

Another approach hospitals may take is assisting larger businesses in design, implementation, and management of their own in-house clinics. The hospital may support in-house clinics with back-up nurses and physicians. Hospitals may function as a referral center.

Since industry's primary interest is cost-containment, model designers must keep in mind effective techniques for containing costs. Though the thrust of this discussion is clinical services, the importance of health promotion to cost-containment must be mentioned. In relative terms, utilization alteration through health promotion, cost-sharing, and hospital preadmission screening have the potential of impacting costs more than other worthwhile techniques (10:15).

#### Considerations

The objectives of health care management, which includes clinical services, are to improve the health of employees and decrease the expense of health care. In the interest of cost and efficiency health care management is divided into levels. Level I is concerned with treatment and getting the patient well at minimum cost. Traditionally, the Level I manager has been a physician who attempted to get patients well by his own treatment. In many cases this is necessary but not in all. Efficiency may be gained by the physician working through others providing acute care. A coordinating manager is essential to both quality and efficiency. The Level I manager must be a physician but his services may be coordinated through a non-physician. Other

providers of acute care include hospital or clinic based nurse practitioners, physician-assistants, physical therapist and other rehabilitative services. These providers comprise the other levels of health care management.

In estimating start up costs a common mistake is underestimating professional time. Plans to start programs with existing personnel often results in a loss of performance and efficiency in the first area. Many times this mistake is made because of enthusiasm or feelings of pressure from outside forces. Adequate allowance should be made for staffing, out of pocket expenses, and other start up costs.

#### Examples Of Clinical Services

##### Parkridge Hospital

Parkridge Hospital in Chattanooga, Tennessee began a clinical program about 4 years ago. The market was entered with the idea of using price cuts to attract industry. Emergency room physicians completed physical examinations for fees that to date has not yielded profits. Eventually, the decision was made to discourage physicals. However, Parkridge continues to pursue clients for on-the-job illness and injury cases. No price breaks are offered industry. The prospective clients are marketed on service.

The Emergency Room caters to industry accounts by maintaining profiles on each company and by offering fast service. The profile cards of the various firms contain information about specifications for treatment and approved referral list (64).

Meridian Regional

Meridian Regional Hospital offers discounts on clinical services to its industrial accounts. Discounts are as follows: laboratory services - 15%; radiology - 25%; emergency services - 50%. At no charge, Meridian offers annual flu shots and blood pressure screening. These are done at the worksite with a nurse and dietician making the visits. Also free, is a trimester showing of a film on the back and proper lifting.

Meridian Regional enters written agreements with companies to provide clinical services. In addition, the letter identifies the one physician the company is to use to complete pre-employment physicals (63).

#### IV. PHYSICAL HEALTH PROGRAMS

The Kellogg Foundation has defined health promotion as, "The application of knowledge from basic clinical and behavioral science to influence the practices of individuals, groups, families, and communities to prevent illness. Its principle strategy is to motivate individuals to learn to practice life-long positive health behavior." (7:9). Health promotion deviates from the tradition of treating illness only after clinical signs and symptoms develop. Health promotion combines educational, organizational and environmental activities designed to support behavior that is conducive to the health of employees and their families (38:3). The approach to health promotion is as important as the program itself.

The successful approach to health promotion emphasizes the positive benefits of behavioral change. Major chronic diseases, such as chronic obstructive pulmonary disease and heart disease, are linked to life-style and certain educational, organizational and environmental interventions are used. These interventions emphasize the near immediate rewards as opposed to long-range consequences (e.g., "you will suffer a heart attack if you do not exercise."). Evidence suggests that these programs work.

Achieving good health and maintaining it is far less costly than restoration. As George Will said, "It is irrational for Americans to spend so much to cope with illness when so much illness is the predictable consequence of habit. Americans are paying increasing sums of private and public money for the post-facto medicine that treats consequences of dumb behavior."

(Newsweek, April 19, 1976). The consequences of dumb behavior are evident in heart disease and cancer. One in four American males dies of heart disease before age 60 and one in three Americans smoke, risking cancer and emphysema (25:5).

Employers should get involved in health promotion since they are already involved in providing health care insurance, sick leave, and so forth. The advantages realized from health promotion include reductions in health care costs, absenteeism, and turnover. Health promotion programs increase productivity, employee physical fitness, and coping. Health promotion programs are a demonstration of company interest in the company's greatest asset - its employees (7:9). The community-physicianhospital health care system will continue to provide and improve the current excellent care in episodic illness. This system is limited. In the words of William Hettler, M.D., "epidemiologic studies tell there is a significant amount of disease, disability, and death involved in lifestyle choice. Doctors can only influence about 10 percent of these choices." (25:7) Business is the principle structure in which desired health objectives can be reached (38:110).

Employers should develop comprehensive health care plans for disease correction and health promotion. The plan should acknowledge that health status is a compound of heredity, lifestyle, social and physical environment, and all kinds of emotional stimuli, as well as medical care. The ultimate goal for comprehensive health care is to integrate wellness improvement, disease prevention, and disease correction.

The remainder of this section is the result of a literature search on the importance of health promotion programs to business and employees. This discussion of health promotion is intended to provide background and a source of information to program developers and planners.

Comprehensive health care management and program development is discussed from three conceptual bases including: (1) the management of specific illness or injury, such as, pneumonia or broken bones. This level of programs is disease oriented and includes worker's compensation as one of its components; (2) the lifetime health level of programs includes health education, periodic health monitoring, provision of preventive measures, and wellness intervention; (3) the third level of health care management is concerned with employee population and systems. At this level, principles of biostatistics, epidemiology, and operations are applied to specific working populations. Health Hazards Appraisal is a practical application of these principles (38:16).

#### Background

Past alternatives to prevention emphasized detection not prevention. Annual physical examinations were the mainstay of many health programs. This approach of early detection did not prove to be cost-effective for businesses. For example the expense of annual PAP test exceed the expense of potentially undetected cases of cervical cancer. If screening is extended to a population of known higher risk the benefits may exceed the

costs. Another alternative, multiphasic screening, is used by some firms as a less expensive means of screening. Some multiphasic screening programs place partial emphasis on screening but maximum emphasis is on intervention after detection. These alternatives do little, if anything, to address the habits that predispose one to certain chronic illnesses.

The most promising alternatives are behaviorally oriented. The objective of these wellness programs is "not merely to avoid illness or to prolong life; rather its objective is to enhance the quality of a person's life through activities that are designed to continually improve the state of physical, mental, emotional, and spiritual well-being." (4:107)

Interest in health promotion has increased with the costs of medical care. Employers pay nearly half of the nation's health care bills, which are approximately 10% of the gross national product. Insurance, absenteeism, replacement and training of employees lost through illness all add to this burden (7:5). About 130 million workdays a year are lost to employee illness costing \$25 billion. Approximately \$225 million is spent on worker's compensation. Replacement of victims of heart disease costs approximately \$700 million per year to replace (16: ). The leading causes of death are: heart disease (48.4%); cancer (20.6%); and accidents (5.5%). Smoking, hypertension, and alcohol are among the major factors contributing to these deaths.

#### Financial Savings: Direct and Indirect

The financial advantages of health promotion programs are both direct and indirect savings. Direct financial costs of declining health are the visible dollar outlays such as medical and hospital expenses, sickness benefits, and workmen's compensation. The indirect costs which affect productivity or effectiveness on the job are absenteeism, limitation of performance, poor efficiency, and disruptive behavior. Some estimate these costs to be two to three times the direct costs.

#### Location a Consideration

There are advantages in locating the health promotion programs convenient to the worksite. Adults spend about one-third of their time in the work place, thus making it easy for the employee to incorporate seminars and fitness programs into their daily routine. Many jobs have become automated and monotonous, resulting in low productivity, low quality products, and the reluctance of workers to commit themselves. Fitness programs have been successful in overcoming these problems created by the work environment. Fitness programs, in addition to improving physical fitness and self-esteem, have been observed to reduce work environment stressors that contribute to heart disease, peptic ulcers, arthritis, and a variety of mental health problems, often the realization of savings from health care management programs is location dependent (38:146).

Cost-effective provisions for prevention of chronic disease is difficult in the conventional modern setting. To provide the

preventive elements of a health care management program the following should be considered: (1) the facility should be located near those served to minimize the costs of transportation and lost time; (2) the convenient location will minimize time lost during the screening process; (3) hospitals must consider a facility and system that provides appropriate medical care for non-acute and ambulatory patients; (4) convenience is needed in the provision of health surveillance and follow-up medical treatment; (5) the facility's location and the system must facilitate mass communication and individual information-seeking (This is important for effective health education); (6) the system must be one that provides for social support. The industrial setting best satisfies these considerations for effectiveness in behavior modification. However, worksite provisions must be balanced against the volume needed for cost-effectiveness (38:146).

System Objective: Behavioral Modification

Medical care has long been recognized as desirable, but it fails to promote prevention and cost containment. The addition of lifetime health programs as a level increases the comprehensiveness of health care management. Lifetime health programs aim to alter lifestyle through prospective medicine. Prospective medicine seeks to provide individuals with the knowledge and understanding of disease risks and how risks may be avoided or reduced (25:12). Additional benefit may be derived from supporting healthy behavior changes with organizational and environmental arrangements.

The system for behavioral modification progresses along a continuum that results in decreased morbidity and mortality. The process often begins with increased awareness followed by activities of increased knowledge, a change in attitude, and then behavior. The behavioral change decreases risk thus decreasing morbidity and mortality.

Treating awareness is often the most immediate need and therefore the first objective of the health program. The intent is to increase awareness of health habits and the consequences of the detrimental ones. This objective is often accomplished with the use of media. Through media, individuals gain more understanding about health problems. Communication is through print and audio visual methods.

Knowledge is increased by providing information. This objective within the health program system requires more skills than increasing awareness. Information about exercise, nutrition, the effects of smoking, and signs of cancer can be offered. Presenting information involves methods that require the skills of an educator. Attitudes and beliefs of employees are often major determinants of behavior affecting health. A change in attitude requires educational intervention and reinforcement. Attitude is often associated with an individual's preception of internal control over his own health.

Change to healthy behavior is the fundamental objective of health promotion programs. It is at this level that reduction in direct and indirect health care costs begins. Perpetuation of healthy habits through social and environmental support results

in a decline in risk leading to a decline in morbidity and mortality. Measurement of cost savings from the change in risk, morbidity and mortality occurs over a long time. Measurement of financial benefits is further complicated by the complexity of identifying indirect savings and the uncertainty of projecting medical encounters that did not occur due to change in health status (38:18-21).

#### Health Promotion Programs-The Fundamentals

The 4 basic components of health promotion are introduction, screening, feedback and follow-up. The introduction phase is the period in which employees are alerted to the availability of good health programs.

The screening phase is the period in which the employee completes a lifestyle questionnaire plus blood drawing, height, weight and blood pressure measurement. For feedback, all the elements of screening may be computerized for health risk appraisal. Health risk is calculated by computer programs such as "Health Hazard Appraisal" developed by Lewis Robbins, M.D. Health Hazard Appraisal is used by Data Control's Stay Well program as a means of motivating people to change their health habits.

The feedback phase may be handled in groups or person-to-person. In either case, the employees have an opportunity to assess their own status and to establish individual "wellness" goals. The employer may facilitate goal accomplishment by offering risk reduction programs. The programs may include

blood pressure control, smoking cessation, drug-alcohol control, weight control, exercise and stress management.

Follow-up is important to the growth and development of the participants and the programs. Re-evaluation through screening and an activity questionnaire encourages the participants.

Collective assessment of the reduction in cardiovascular disease, cancer, stroke, mental health, and accidents; decline in absenteeism, medical costs, insurance premiums and disability; and an increase in morale and productivity will be helpful in changing programs (17:31).

The confidential health risk profile of an individual is to estimate one's theoretical risk of dying from any of the 12 leading causes of death for people in a given age, sex or race group. The most important point to be considered is the positive aspect, that by changing certain behaviors the individual may be able to extend life expectancy (18:60). As discussed early in this chapter, managing the health of employees is an art in which direct determination of individual's benefits is difficult.

As an art, preventive medicine is nonexacting and can not prognosticate which fat man is at risk or which smoker will develop cancer. So preventive measures are applied to everyone who is at risk in hopes that no appreciable harm is done to those who do not need it (38:16).

In summary, there is an obvious need to conduct some sort of health risk profile on each company's employees.

Collectively, the health risk profiles guide the employers in the selection and alteration of health promotion programs. To the employee, the individualized health risk profile is an important link in behavioral modification (38:17). Programs that may be beneficial to employers and employees include: onsite testing, counseling and educational sessions; on-site facilities; stair-a-thon; T-shirts; races; summer sessions for school teachers on weight control, CPR; first-aid seminars for baby sitters; CPR for day-care workers; pre-season high school athlete physicals; physician seminar on sports medicine; athlete rehabilitation; smoking cessation and parent effectiveness training. Keying the program to the individual is probably the single most important motivating factor (25:25).

#### Planning Successful Health Promotion Programs

Planning for health promotion programs entails consideration of a name for the comprehensive health management program, survey of employees, strategic planning, guideline development, issue resolution and program design. The hospital developing programs for sale to industry may have to alter some of these considerations. However, the development of prototype strategies, guidelines and program design are necessary. The hospital needs a data base for planning.

Data collection, or more appropriately market research, by hospital administrative staff or marketing consultants provides the information needed for planning. Market research provides some insight that is useful in the next stage - program

definition (9:145-146). Program definition involves defining the scope of the service to be offered. The planners must decide on the components, when they should be developed and who should be responsible for program development. Program development is the next stage followed by implementation. Since the last three of these four stages - definition, development, and implementation involve many hospital services a cross-section committee should be named early on. Medical staff representatives should be involved at the appropriate time. Once operational, a letter should be mailed to the entire medical staff explaining the programs and their intent (9:146). The intent of medical staff involvement and communication is to avoid the physician's turf and alienation of industrial clients. Several hospitals with programs suggest leaving "Wellness" out of the name in an effort to avoid these negatives (4:107).

The hospital must consider marketing when planning its strategy. Programs may be developed and offered in order to provide a one-stop-shopping comprehensive program. Location is often a marketing decision. Strategy should involve plans by the hospital to educate industry as to their needs for various programs. The hospital should aim to alter industry's perceived needs (9:147).

Criteria for occupational health programs - health promotion, employee assistance and administrative assistance must be developed. The criteria may include: (1) meet the legitimate health care need of the local business that is not being met or

can be met in a better way; (2) provide these programs in a cost effective manner; (3) program compatible with goals and interest of hospital and medical staff; (4) includes a mechanism for evaluation and assessment on a regular basis (11:3).

The hospital's planners of the occupational health programs have many other issues to resolve. Some issues would be best handled by the planning committee, others by individual committee members and non-members. Issues to be considered are: (1) Is it mandatory that all individuals using fitness counseling services be referred by physicians; (2) Will referral from a physician be necessary for a patient to participate in various programs; (3) Will active support be given to the center by the local medical staff and association; (4) Are there experienced consultants and management staff available to design, market and operate the center; (5) Will the center have separate management; (6) Will the marketing efforts encourage large employers to include the center as a part of employee's fringe benefit programs? (13:20).

Program design must be considered by planners on both a macro- and micro-level. In other words, what design is most feasible for the entire market?, and Which programs are best tailored to each company or group of small companies?

Flexibility in program design is essential. Other essential elements of program design are assessment of needs, setting priorities and objectives, organizational location, implementation strategy and identification and allocation of resources. Assessment of needs involves determination of

effectiveness of other health promotion activities, identifying the employees perceived needs, determination of existing health habits, prevalence of risk among employees, identification of clinical indicators of risk and the determination of each companies utility and costs of medical services.

Setting priorities and objectives for the programs is difficult. Program goals are often not readily quantified.

The organizational location of the programs must be determined for the hospital and each company. For example, should the center be a department to itself within the hospital or apart of one or more existing departments. Within each company, should the programs be located in the medical, benefits or personnel departments.

For each company, the manager and company must select the physical location, the type of educational approach to be used, timing, publicity, incentives and resource allocation.

The hospital's department manager identifies and allocates resources. Personnel are selected (38:4).

The hospital's manager should provide the expertise and coordination to assure program success. The manager should be capable of directing the development of successful programs both on and away from the worksite. Features for development are: strong leadership; administrative support; accessibility (on-site or nearby); availability (right program at the right time); assessment (continuing evaluation); recording (techniques should be devised for monitoring the progress of participants); group exercise; challenging physical exercise programs for the more

advances; continued motivation, stimulation and incentive; organization (attention to mechanics and details); visibility and variety; continuity and extension (not working against existing programs; and to further insure success the programs should be "fun". The manager should be capable of determine the kind of programs that a company should have. Programs recommendations should take into account the company's size, location, space availability, employee age and sex distribution, dining facilities, disposition of top management and the feelings of supervisory personnel. Finally, the manager should be capable of quickly familiarizing himself with a company's personnel summary reports. This information is essential to program selection and evaluation (18:28-29).

#### How to Begin

Hospital development of occupational health programs involves preparation prior to approaching potential clients. Prior to launching programs the hospital should assess the intended market's need and compare to perceived need. Appropriate marketing techniques should be employed to alter perceived need thus creating demand. Before creating demand the hospital must ascertain their capability to provide employee data collection to decide the type and scope of the programs. Early program successes should be gained with hospital employees. This approach provides an opportunity for program refinement and a success story with which to approach potential industrial clients (7:6).

Initiation of programs and/or seminars for industrial clients requires: (1) assessing pre-program health costs (This includes assessment of health insurance costs plus other more difficult cost-premature loss of valued employee, decrease in productivity due to absenteeism or poor health); (2) formation of a planning group; (3) designation of one person to coordinate the overall development and implementation of the program; (4) development of a policy for a given firm stating the purpose and goals of the programs; (5) assess employees, and if possible the family's need (25:6). Needs assessment may be accomplished with a questionnaire to determine the employees perceived health status; exercise habits; and interest in programs on symptoms of common disease, healthy diets, effects of smoking or drinking or healthy living habits.

Evaluation is an important part of occupational health promotion programs. Evaluation is another important reason for the initial survey. The initial survey is the basis for setting goals. The goals should establish a clear understanding of what the program activities are expected to accomplish. Some factors to consider when measuring effectiveness are: number of employees participating (initial response); number of employees participating regularly; knowledge gained from educational efforts (pre- and post-test); subjective comments; number of employees who reach and maintain goals; consumption patterns; absenteeism reduced; the number of on and off duty accident and effect on productivity (25:22).

### The Hospital as Provider

Hospital provision of health promotion programs is advantageous to both the hospital and industry. Some hospitals have difficulty in committing limited funds that may require a 3 to 5 year payback, if ever. Some hospitals commit to health promotion programs in expectation of indirect benefits. Health promotion programs may be advantageous because: (1) illustrate reason for hospitals existence - serve the community; not guaranteed source of revenue but financial opportunities do exist; generate referrals, help enhance physician's practice (32:6).

Hospital programs can be particularly attractive to smaller business who can not cost justify an independent program. Small businesses, in many ways, has as much at stake, and as much to gain by an organized effort to improve and maintain the health of employees as large employers. Small businesses may not be paying for employee health care or health insurance but they do have an interest in productivity and absenteeism, just as do larger businesses. The costs of health promotion should be regarded by businesses as insurance to protect against lost (18:25).

### Pricing

Some ideas of pricing may be gained from existing programs, such as Data Control's Stay Well. The components of Stay Well are priced as follows: health risk index, interpretation and counseling - \$44 per person; smoking cessation - \$750 for six 1 1/2 hour stop smoking clinic sessions; eating for good health - \$880

for six one hour nutrition classes; weight control -\$900 for 14 45 minute weight control sessions; stress management classes - \$180 for 4 one hour sessions; exercise classes - \$900 for 16 one hour classes; dance fitness - \$900 for 16 classes. These prices are based on class sizes ranging from 10-30 enrollees which is about what might be suitable for a group of 500 employees. To accomodate 1,000 most courses are offered twice (18:76).

#### Examples of Company Programs

Many companies are not waiting for proof of the hypothesis related to the benefits of health promotion programs. Many accept the empirical evidence of employee benefit and employer savings as sufficient. William B. Goldbeck, director of the Washington Business Group on Health (which represents about 200 of the nation's Fortune 500 companies), states, "We can see the benefits in the corporate bottom line." -though he concedes the early results he's talking about are "largely anecdotal".

#### Kimberly-Clark

Kimberly-Clark's comprehensive health management program includes medical care and health promotion programs. The health promotion program includes multiphasic screening, complete physical exam, health history, health hazard appraisal, and cardiovascular testing. An individualized plan for exercise, diet, and related health education is prescribed when test results are obtained.

Kimberly Clark physicians and nurses strive to gain the confidence and participation of employees at the assessment conference. During the conference questions are asked of the employee in an effort to help the employee describe problems, set goals, and create alternative plans. As a result behavioral goals, three at most, are written based on perceived needs of the employees. Questions asked within the conference may include: (1) What do you believe should be done to improve your level of wellness?; (2) How much time and money do you spend to improve your health? Disease risk factors are identified and explained in physical, emotional, cultural contexts.

Test results are used as a basis to make referrals. Follow-up is made by the medical staff and the employee is encouraged to return for reinforcement. The employee becomes aware that health is in his/her own hands. Seminars are held on nutrition, weight control, substance abuse, stress management, and coronary risk factors.

In Kimberly Clark's initial assessment, 88 percent of its salaried employees and 16 percent of the hourly personnel were surveyed. The results showed 22.6 percent of the males and 14.4 percent of the females had 2 cardiovascular risk factors while 4.6 percent of the males surveyed and 1.8 percent of the females had 3 risk factors (7:22). Risk factors included hypertension, smoking, and hypercholesterolemia.

Kimberly Clark will not release data on healthcare or absenteeism cost savings until they have more hard core data. However, of those enrolled in treatment for "chronic dependence"

on alcohol, there was a 70 percent decline in absenteeism (18:34).

#### Prudential Insurance

At Prudential Insurance Company of America's Southwest Home Office it was estimated that lifestyle is responsible for 37 percent of cancer, 54 percent of heart disease, 70 percent of cirrhosis of the liver, and 69 percent of all automobile accidents. The company approach to health care acknowledged that sex, age and genetic heritage are not controllable risk factors, but smoking, obesity, diet, hypertension, and lack of exercise are controllable.

Prudential developed a health promotion program and constructed a fitness facility at its home office. The facility was built on the roof top and consisted of a quarter mile track, two small gyms and two exercise platforms. Prior to developing a protocol and extending invitations to employees, a physical fitness coordinator was hired. The assessment interviews are similar to Kimberly Clark's. Participants in the fitness program agreed to exercise 3 times per week for 20 minutes (the objective is to increase heart rate to 70 to 80 percent maximum). Classes, held in an effort to support the informational level of behavioral modification, included aerobic dancing, calisthenics, jogging. Educational programs to satisfy the informational level included lectures on obesity, smoking, coping with stress, and diet modification. Screening rechecks were conducted every 2

months and included measurement of weight, skin fold, blood pressure, and pulse rate.

Results were reported after 160 participants had been enrolled at least one year and had completed at least one annual reevaluation. In response to a questionnaire, a random sample of 66 participants gave a subjective evaluation of the program as follows: 75.8 percent felt better physically; 66.2 percent felt better mentally, 59.1 percent felt better emotionally, and 51.7 percent felt they were more productive as a result of the program. In objective terms, the program had minimal effect on cigarette smoking, a more significant effect on alcohol consumption, and no appreciable effect on weight reduction. Significant reduction in absenteeism was observed.

The effect of the health promotion programs was measured on the basis of the male population and the female population. Employee fitness was categorized as low fitness, fair, or good fitness. Fewer days were lost from work by the good level of fitness in both male and female population. The male-female population in the low fitness category had exactly the same average of absenteeism as the entire office, 8.6 days. Those in the fair level of fitness had only 4.1 days, while those in the good level averaged 1.6 days absence.

Participants in the program at all levels of fitness were absent, on the average, 3.5 days for the year, while the office as a whole averaged 8.6 days. The reduction of 5.1 days per participant represented substantial direct savings. The savings were two to three times the cost of the program. The savings

realized were measured only in terms of sick pay not lost in productivity, nor the cost of cross-training, replacement training, nor overtime pay.

Prudential indicates two ingredients are essential to a successful physical fitness program. One ingredient is the presence of a trained physical fitness coordinator, and the other essential is a strong commitment by top management.

IBM

IBM offers health promotion courses conducted over two to twelve weeks. Community organizations and qualified instructors are utilized to offer both mini-and comprehensive courses in exercise, smoking cessation, stress management, weight management, healthy back, first-aid, and CPR. Since two-thirds of IBM's medical costs are incurred by employee's families and retirees, health promotion programs are open to all who are insured under IBM's health insurance program (17:24-25).

In its initial screening, IBM identified previously undiagnosed disease in 41 percent of its employees.

Kennecott Copper

Kennecott Copper's Insight Counseling Program reports a 58 percent reduction in absenteeism and a 55 percent reduction in non-psychiatric medical costs.

New York Telephone

New York Telephone claims its nine wellness programs saved the company \$2.7 million in lower absenteeism and treatment costs in 1980.

NASA

A study of NASA employees concluded that regular users of an employee fitness program improved their work performance, showed a more positive attitude towards work, and felt less stress and tension.

Skokie Valley Hospital

Skokie Valley Hospital developed wellness programs after being asked by company to develop a program of utilization review and claims management as a means of capping medical care costs. Skokie Valley came to the realization that only so much could be done with utilization review (17:71-73). Utilization control means stopping a practice or procedure that has little value in order to avoid costs. With health promotion, Skokie Valley advocates that a company must incur some costs of some sort in order to first produce health and subsequently garner the savings that flow from the presence of health (38:290).

The success of the "Good Health Program" is attributed by program director, Don Zeigler, to keeping the programs interesting. The program must generate the attitude that "I can do it too". Employee payment or contribution to cost is held to be an important component of the program. The employee pays \$44 for a health hazard screening.

A Company's Evaluation of Health Promotion Programs

There is little hard evidence of the cost-effectiveness of health promotion programs. However, potentially significant costs that could be reduced are insurance premiums, disability benefits, and medical expenses. In any event, employers who are bearing the brunt of \$200 billion per year health-care costs are becoming willing to try health promotion programs just based on empirical evidence. Most experts are convinced that these programs will save money, both immediately and long-term. Immediate savings in reduced absenteeism and improved morale and productivity will probably exceed the program cost. Additional savings that may be anticipated in the long-run are saved lives and decreased morbidity (17:77).

The costs to be considered by a specific firm evaluating the costs and savings of health promotion programs include: (1) the average wages for days lost; (2) cost of treatment if condition is not prevented; (3) cost of accident on and off the job; (4) disability pay; (5) cost of replacement of person lost to illness or disability. Other factors present that are more difficult in obtaining firm monetary figures include: (1) the value of full productivity; (2) cost of reduced productivity; (3) the number of days saved by making hypertensive employers normotensive and the resultant savings in health insurance; (4) the number of days saved by a smoker stopping and the resultant savings in insurance; (5) the value of a life saved; (6) the value of the attitude change to productivity; (7) the cost of a heart attack; (8) the cost of various types of cancer (7:27).

Some general statements can be made about the economic benefit of some health promotion programs. A marginal program may be more valuable as a part of a comprehensive program than as a stand alone. An economic analysis of blood pressure control indicates that the decrease in treatment conditions created by unmanaged hypertension will generally not fully cover the costs of extra intervention. Extra intervention is the diagnosis, monitoring, and medication associated with detection and treatment. Smoking control programs can do little better than break even. Savings that are capable of swinging the balance into the black are life insurance, disability, and workers compensation losses. Employer benefits may be minimized by employee turnover (38:291).

A health economist, Kristein, published what was called conservative estimates of economic benefit of reducing risk factors (Preventive Medicine 16, 1977). According to Kristein, a company can expect 100 out of 1,000 screened employees to have two or more risk factors. (Risk factors: smoking, hypertension, elevated cholesterol, and obesity). If all 100 significantly decrease these factors then 2.5 heart attacks are prevented. If only 25 significantly decrease these factors then the company's medical care spending will be reduced 10-15 percent. Using data from the Framingham Heart Study, Kristein reported the following potential savings: if one person stops smoking \$200 per year in medical expense is saved; if one person controls his hypertension \$260 per year in medical expenses is saved; and if one person

reduces his blood cholesterol level by 20 percent then \$60 per year in medical expense is saved.

#### Participant's Evaluation

The willingness of employees to participate in worksite based programs indicates greater success. When multiphasic screening is offered to the community 30 percent participation is realized. When offered at the worksite 90 to 95 percent participation has been observed. The reasons given by employees for their willingness to participate at work include: convenience; free; attitude of quality, that is employees often feel that employer offers only what is best; the good reputation of the company's medical department; and OSHA regulations.

#### Evaluation Limitations

Financial and health status merits of health promotion programs are difficult to assess. Cost-benefit analysis is difficult because of difficulty in obtaining hard data about costs and the impact of health promotion activities on things such as absenteeism or productivity. The difficulty is due to: (1) lack of, or mixture of, health data bases; (2) differences in assigning monetary values to health results; (3) problem of relating a specific health result to a specific health promotion program (7:25). The lack of health data stems from personnel records that are not epidemiology oriented. Absences are recorded but the cause of absence is often undocumented. The difficulty in assigning monetary value rest in the difficulty of separating indirect costs, such as, cross training or valuing monetarily,

things such as life or quality of life. The short-term benefits of health promotion include a decrease in absenteeism, an increase in productivity, and employee morale being easier to measure. On the other hand, the long-term gains of change in lifestyle do not show up right away. The benefits of lifestyle change require at least 3 years to develop.

As in previous sections, examples of successful health promotion programs can be cited, however, exact benefits and cost are only indicators. Executives, as decision makers, should feel comfortable committing to health programs using indicators and surrogate measures. After all, business decision-making is a nonexacting art (38:16).

Using direct cost and benefit, allocation of indirect costs and benefits and valuation of surrogate measures (such as attitude change) many companies have deemed health promotion programs as beneficial. Canada Life Assurance Company reported those classified as "high adherents" in the company's fitness and life-style program had a 42 percent decline in absenteeism. A Swedish Goodyear Factory reported a 50 percent decline in absenteeism. Another study acknowledged the difficulty in demonstrating a direct cause and effect relationship between fitness programs and productivity measurement. In this study, before and after, attitude surveys were used as surrogates of productivity. The conclusion was that health programs are morale builders (17:83).

## V. EMPLOYEE ASSISTANCE PROGRAMS

Employee Assistance Programs cover alcohol and drug addiction, stress management, legal problems, marital and family counseling, financial counseling and psychological counseling and mental health. Even though the other programs have been added, EAP today is still basically alcohol counseling. The others are more limited in scope and number.

### Alcohol and Drug Abuse

The problem of abuse is not the use of a drug off the job, it is the behavior that the drug may cause on the job. An employee's drug or alcohol usage may impair his health and interfere with his job performance. The employee's deteriorating performance resulting from substance dependency is the most prevalent element of the problem, but it is difficult to measure. Another element is an employee's concern for an addictive family member. Thus, company programs also need to be open to family members.

Several attempts have been made to document the extent of the problem. The Florida Department of Health and Rehabilitation Services reported that about 10 percent of the state's work force had job performance deterioration (22:4). Half were attributed to alcoholism and the remainder to behavioral disorders including drug abuse. Booz, Allen, and Hamilton reported that 3 to 7.6 million of the 76 million U. S. employees were alcoholics (8:4). In 1979 alcoholism cost the United States \$40 billion. It is probably costing \$50 billion by now because of the rising alcohol

problem with young people. The \$40 billion estimate was made by the National Institute of Alcoholic Abuse and Alcoholism (NIAAA), a component of the National Institute of Health. According to NIAAA, \$19 billion is lost in production through absenteeism, due to alcoholism, \$12 billion is spent on alcoholics' health and medical services, \$7 billion is the lost in motor vehicle accidents involving alcohol, and \$1 billion is spent on criminal justice and alcohol research programs. This does not count workers present but functioning below optimum because of alcoholism. Additional productivity is lost in worry over an alcoholic relative. Plus fires caused by alcoholics leaving lighted cigarettes cost an estimated \$1 billion each year.

The latest medical research clearly labels alcoholism as a disease most closely resembling diabetes (65). It is not related to the volume, dose, nor duration. As a disease it is not a psychiatric problem. Of all alcoholics 87 percent are chemically dependent, 5 percent are psychiatric, and 8 percent are mixed. If addicted to alcohol, one is addicted to all drugs. Seven signs of alcoholism are compulsive drinking, changing tolerance, withdrawal syndrome, blackouts, physical destruction, psychological destruction, and sociocultural destruction. Typically, alcoholics have had 5 to 7 years of alcohol use. In a two year period of abuse they "go over the wall". Talbott warns that America is moving into the chemical culture. The 1990's will see dependency as the most important health problem.

Some occupations seem to have more alcohol and drug problems. These occupations provide acceptance or encouragement of drinking, patterns which are discouraged in other settings (28:496). Drinking problems are far more common among "lower blue-collar workers." Other drugs are used more by men, minority group members, the poor, the young, and urban dwellers.

Working heroin addicts were found to be more similar to other workers than nonworking addicts (12:96). They were older, better educated, more often married, and more likely to be white than other addicts. In spite of their heroin habits most held onto their job for a year or more. However more than half admitted that their drug habit caused them to lose days at work. The findings of this and other studies suggest that the stereotype of the heroin addict as a person who is highly unstable and unable to hold a job must be revised.

The impact of drug abuse on work performance varies widely, depending on frequency, amount of use, type, and potency of the drug. In the case of marijuana, it can be assumed that regular use is accompanied by impairment of job performance (42:266). It was observed that alcohol abusers are also abusers of barbiturates (20:219). The effects of barbiturates, especially if used with alcohol, can have severe effects on job performance. Evidence indicates that of all drugs alcohol abuse overshadows all others in terms of impact on job performance (60:326). Long-term abuse impairs cognitive functions required for efficient job performance. It also deteriorates the body, leading to physical

illness. Employee alcohol and drug abuse affects job performance through tardiness and early departures, absenteeism, poor judgement, accidents, safety hazards, erratic and decreased productivity, lowered morale, resentment among other employees, waste of supervisor's time, and damaged customer and public relations.

Elements of the Employee Assistance Program for Substanied Abuse

The Third Special Report to the U.S. Congress on Alcohol and Health lists the major goals of occupational alcohol programs (58:23):

- (1) To reach employed problem drinkers in order to reduce the cost of poor performance and absenteeism associated with their drinking.
- (2) To minimize grievances and arbitrations associated with employee alcohol problems.
- (3) To recover the health and efficient job performance of valued employees.
- (4) To provide assistance to the families of employed problem drinkers (and/or to the family members with drinking problems).
- (5) To intervene early enough to obtain substantial rehabilitation.

The emphasis is on early detection and intervention. Since job performance is usually affected early, the workplace is an important location for detection. Also this mechanism gives the employee's family access to needed services. Four models are

generally used in alcohol and drug abuse programs: consultation only, assessment-referral, diagnostic-referral, and diagnostic-treatment (inpatient and outpatient or outpatient only). Current substance abuse programs include written policies giving clear procedures for firm's response to substance abuse. Also essential is endorsement from both labor and top management. The response of labor unions vary, but most are open to substance abuse programs. Other essential components are a joint union-management committee; educational programs for management and supervisors, and employees and families; effective communication at all levels; an active committed coordinator; informal or formal counselors; active involvement in Alcoholics Anonymous; backup residential treatment service; good liaison with community services; and periodic assessment and updating of the program.

Educational seminars of relatively brief duration are an effective means of increasing employee's alcohol knowledge and awareness, their familiarity with a company's alcohol and drug policy, and the likelihood of using established company programs for substance abuse (35:477).

The key element of the strategy is the "constructive confrontation" of employees whose job performance has been deteriorating. Ed Pierce of the Alcohol and Drug Abuse Section for the State of Georgia trains coworkers and family for constructive confrontation. He uses an intervention technique developed by Dr. Vernon Johnson of the Johnson Institute which works 90% of the time. Pierce warns against untrained persons

attempting the technique. A single person acting alone is rarely successful in getting an alcoholic to submit to treatment.

A good referral program is needed for counseling with, as an example, a large corporation hiring a full time counselor.

Smaller firms may contract with an outside physician or a hospital to conduct a rehabilitation program. The successful program need not be expensive; its success will depend on the enthusiasm of the people directing the on-going program.

One model for a hospital program is Long Island Jewish-Hillside Medical Center. It is staffed by counselors, who provide short term (usually one-or-two session intervention around the present problem) referral and linkages to internal and external resources for ongoing help. They did not have to hire any additional staff. One social worker devoted 25 percent of her time to the program. Later as the program grew additional counseling hours were added. The program gave the hospital good visibility in the business community and added revenue without costly expansion. Now the hospital is marketing a package of employee assistance services to local firms (46:702).

How Prevelent is This General Strategy of Early Detection and Referral?

It spread slowly during the 1960s, then in 1970 over 100 companies had a program. Then the number increased dramatically until the number of well-implemented programs was around 600 in 1979 (60:328). A survey of Fortune 500 companies in 1972 listed 25 percent of sampled companies with some type of problem

drinker program. It climbed to 34 percent in 1974 and to 50 percent in 1976. There were no reports of union resistance to programming efforts.

Federal civilian employees have programs mandated with Public Law 91-616 of 1970 and Public Law 92-255 of 1972. They call for Employee Alcoholism and Drug Abuse Programs for federal civilian employees. There are only a limited number of persons being reached by the program (19:58).

There are fewer drug abuse programs than programs for alcoholics. In 1975 there were 209 drug abuse programs in government agencies and 531 in the private sector (44:231). Apparently management attitude has shifted to a more humanistic perspective from the earlier policy of immediate termination (61:25).

The extent of the programs are still limited since there are 1.5 million U.S. businesses and less than 5,000 programs. When the programs are analyzed perhaps 300 are operating effectively. Researchers site stigma and the lack of hard data as major impediments to widespread implementation of programs (49:10).

#### Cost/Benefit Analysis

Most research on costs and benefits is unsophisticated. It has been estimated that problem drinkers cost industry \$1 to \$8 billion. Several studies show company savings from alcohol and drug abuse programs. General Motors Oldsmobile Division noted a savings of \$226,334 as a result of a reduction in lost man-hours (1:14). Federal Civil Service costs are \$5 per employed person

(\$15 million) annually with cost savings estimated at between \$135 and \$280 million annually (54:33). Major American commercial insurance carriers estimate that for every dollar spent in rehabilitation efforts, \$5 are ultimately saved (45:48). It is estimated that a company with 1,000 employees with an employee assistance program will save \$426,740 over a 25-year period (62:118).

Why Have Programs Not Been Accepted by The Majority of Firms?

One reason is that the methodology of supervisory confrontation does not work for many occupations including executives, most professionals, and those working in isolated settings and small businesses. Also unions are not always supportive, considering this an exclusive union responsibility. Many consider an aggressive program an abrogation of the privacy and rights of the employee. Since few insurance plans cover alcohol and drug abuse programs fully this is a deterrent. The cost of the program is cited as a limitation.

Perhaps the major factor inhibiting the growth of occupational substance abuse programs is that until recently there was limited research and evaluation efforts. Because programs are in so many different settings it is difficult to define what the program really is and then whether it is successful. Success is defined differently. Sometimes it is job performance improvement and other times it is modification of substance abuse. Another major factor for slow acceptance is

apathy and unfamiliarity with occupational health programs and the problems of drug and alcohol abusers.

Reaching persons in small businesses is a problem. Since about half of those employed work in small businesses, one approach is a consortium. This approach is advocated by the Addiction Research Foundation. They recommend a group of employees in a geographic area establish a collaborative program. Success depends on the sharing of both fiscal and governing responsibility (52:13).

Some of the management resistance to alcohol programs is explained on the basis of a human-capital approach. The traditional cost/benefit studies have limitations. Namely, they do not take into account the fact that normally alcohol does not impair work performance until ages 45 and 55 when the company has already gotten back its original training investment. Also the average job tenure is 6.5 years for men and 4.3 years for women. For alcoholics it is shorter. Thus the cost of rehabilitation must be low enough to allow the firm to offset its costs. Third, firms are willing to spend more on executive rehabilitation for these employees return them more money (29:34).

#### Why Do Companies Institute Drug Abuse Programs?

"A review of 17 large occupational drug abuse programs revealed that many were initiated by union or management officials who had personally experienced alcohol or drug abuse programs - many were recovered alcoholics, or had adolescent children who were experimenting with drugs. Another reason is to

avoid the trouble and expense of grievances, hearings, and arbitrations caused by alcoholics and drug abusers.

A major reason often given for addiction programs is that they are cost effective. That is, the cost of an alcohol or drug abuse problem to the employer is often said to outweigh the cost of operating a program to correct the problem. There has been some careful documentation of this. Some recent articles cast doubt on the importance of the cost issue. Roman concludes that cost benefit arguments are not as persuasive to industry as previously thought. He bases this on the reasons executives gave him for adoption of occupational substance abuse programs. Roman also wonders why industry has not conducted more cost/benefit studies since they have the resources to conduct sophisticated studies. One conclusion is clear, cost efficiency is not the sole contributor to the decision for an employee addiction program.

Dr. R. J. Hilker, medical director of Illinois Bell says: "If industry takes the position that rehabilitation is not its responsibility, and these employees are simply dismissed, then inefficient, impaired persons will continue to be taken into employment, trained, disciplined, and dismissed. The company will suffer from absenteeism, inferior service or productivity, management frustration, poor morale and increased insurance costs. Industry, therefore, has at least a business reason to try to rehabilitate employees who have behavior disorders..." Many studies have shown that behavior disorders can be handled within an industrial setting more efficiently.

### Stress Management

The initial response to stress is similar whether the situation is pleasant or unpleasant. "It is difficult to know how such essentially different things as cold, heat, sorrow, and joy could produce an identical reaction in the body, nevertheless, this is the case." (48:230). Stress is the balance; homeostasis. Too much negative stress produces distress. Too much positive stress or excitement produces euphoria. A balance is preferred.

Most spend weekends and vacations substituting one set of stresses for another instead of resting. Over time this may increase the disposition toward hypertension with its added risk of atherosclerosis, heart attack, stroke, ulcers, and kidney disease. Since the work place today is likely to be a hotbed of stresses, management of stress is a problem for companies.

In the past 10 years substantial progress has been made in documenting the role of psychosocial stress in the etiology and development of physical and mental diseases. It is now known that disorders strongly influenced by stress include hypertension, ulcers, asthma, colds, and cancer (48:230). Also in the past decade progress has been made in treating stress. Now known are various behavioral techniques including relaxation, meditation, and biofeedback. These techniques combined with drugs work toward both treatment and prevention.

There is little data on stress in occupational settings.

There remains many key basic and applied questions yet to be answered on stress. It is fair to say that company involvement today is still in the experimental stages.

Some of the major class of psychosocial stress include (36:78):

- 1- Work overload, or work stagnation;
- 2- Extreme ambiguity, or rigidity in relation to ones tasks;
- 3- Extreme role conflict, or little conflict;
- 4- Extreme amounts of responsibility (especially for other people), or little responsibility;
- 5- Cut-throat and negative competition, or no competition;
- 6- Constant change and daily variability, or a deadening routinized stability;
- 7- Ongoing contact with "stress carriers" (e.g. demanding workaholics, highly anxious people, indecisive individuals), or social isolation;
- 8- That the corporation, for its own survival, encourages its employees to define their egos in terms of the organization, to contain emotional reactions, and to depend upon it;
- 9- The interaction of one's stage of career development career opportunity, and management style.

In environmental stress, personality and behavior played a part. (15:310). The implications are that persons high in job stress and high in impulsiveness will more likely evidence health

risk factors than persons high in either one above. The issue is complicated by the interaction of combinations of factors within and outside of the work environment.

#### Program Development

There are numerous documented procedures for stress management. Some deal with stress by changing the environment. One is assertiveness training which trains people to reduce tension by taking more control of their lives. People are trained to meet their needs by being assertive, not aggressive. Other procedures help people cope with an environment which cannot be changed. These coping procedures include various mental and psycho-physiological techniques, including relaxation, meditation, biofeedback, and guided imagery.

Two relaxation techniques were developed for stress management. One technique involves relaxing muscles, breathing exercises, speaking the word "one", (to help remove distracting thoughts) and a passive attitude. It is done 15 minutes in the morning and evening. Another technique uses a similar procedure except that people do the exercises in actual stressful situations (14:221).

Various other mental self-control procedures have been developed. Generally systematic desensitization is combined with deep muscle relaxation. One treatment method has employees make lists of events and circumstances in their lives, at work and at home, that are stressors. Then responsive ways of dealing with these stressors are devised. Like alcoholism peer support is

priceless. Some companies have made available psychologists or counselors to whom employees may be referred.

Signs of stress include such things as unexplained and more or less continuous fatigue, joylessness or actual depression, withdrawal from contact or communication with others, frequent unexplained absences, deterioration in quality of work, irritability or listlessness. All or any of these behaviors may be signals that the worker is affected by stress. When these symptoms grow progressively more severe the condition is often described as "burnout" or "chronic stress" as psychiatrists call it.

#### Studies

No precise cost/benefit studies have been made of stress procedures. However the relaxation response is attractive for prevention since it costs only the time involved in practice, has no known side effects, and is reported to be a pleasant and personally rewarding experience.

Only two studies have been published which systematically evaluated the use of a stress management technique in a work setting. At the Converse Rubber Company the "relaxation breaks" (two 15-minute daily relaxation breaks) helped people lower blood pressure and heart rate. The second study compared the relaxation technique with the meditation technique, and with Jacobson's progressive muscle relaxation technique. A total of 154 New York Telephone employees, self-selected for stress, were taught the techniques. After 5 and a half months only the first

two techniques showed significantly more symptom reduction than a group of control subjects.

A hospital may wish to include teaching stress management classes for workers in its Employee Assistance Program. The techniques are fun and are well received. The trainer should be cautious about claims for improvement since so few studies have been done in industrial settings. One wonders if the medical community will support stress management with its lack of scientific supporting data. A hospital should proceed cautiously in this area.

#### Employee Counseling Programs

When stress or burnout is severe and remains unreleaved for extended periods, susceptible workers may become anxious or depressed to a point where they can no longer function effectively. Frequent unexplained absences from work, forgetfulness, excessive anxiety or irritability, and occasions when workers appear to be oblivious to their surroundings are signs of mental illness or psychoneurosis. Normal thought and feeling processes become disorganized and normal behavior is impaired. Obviously, there is no clear line between the temporary upset resulting from stress from which the employee soon recovers, and the psychoneurosis. Similarly, there is no clear distinction between neurosis, where a person is able to function somewhat, and psychosis where one loses contact with reality.

If a company has no health promotion program a troubled employee may be overlooked as being eccentric-until the loss of productivity becomes extensive. The the person's boss usually issues reprimands or warnings until the employee quits or is fired. Companies with a mental health program have another alternative. Within the first weeks of the onset of symptoms the employee is referred to a counselor. The counselor may be a company psychologist or consultant, if there is one, or the worker's own physician or clergyman.

Since many disturbed employees go untreated there is no accurate count of the number needing counseling. Several statistics indicate that the problem is significant. The use of anti-anxiety prescription drugs has now reached more than 100 million tranquilizer prescriptions a year. The annual total of prescriptions for psychoactive or "mind-changing" drugs is nearly 300 million a year, or 25 percent of all prescription drugs of all kinds sold in the United States. "In any given year, 22 percent of the adult population of this country use some prescriptive psychoactive drug, 9 percent use at least some over-the-counter psychoactive drug, and 14 percent admittedly increase their alcohol consumption as a means of coping with distress".

With a quarter of the adult population known to be seeking help for emotional or mental disorders, there is a place for a company counseling program. When the case is not severe, company resources are often enough. Large companies may hold classes in

stress management, relaxation, and popular psychological techniques like assertiveness training and transactional analysis. Smaller companies may refer employees to a community agency or consultant. Counseling may involve the family. It is recommended that a firm spend 15 percent of its health costs on mental health. If it is less than this it adds to the physical health costs (57:221). If it is more, there is abuse. As with alcoholics, the troubled employee is defined as one whose work is impaired.

#### Model

Charles River Counseling Center offers a on-site counseling program to firms in the Newton, Massachusetts area (57:221). They overcome the three barriers of stigma, accessibility and time, and cost by contracting with the firm to provide an on-site counselor for a predetermined number of hours per week. One employee is allowed eight visits on-site. They market to the top level of management with a message of cost savings. The theme is that counseling will reduce health costs, absenteeism and personnel turnover. The program is tailored for each employee. Quarterly reports are given management on the number and kinds of counseling. Marital and family stress are the main problem areas.

#### Conclusion

A firm needs more options for a troubled employee than transfer or termination, or probing themselves into the problem. A good option is a counseling resource for the troubled employee.

This option restricts the supervisor to a supervisor's qualifications, evaluating the work performance of employees.

Relatively high success rates have been achieved through occupational counseling apparently are the result of the on-going long-term "support system" rather than any particular treatment modality. The follow-up therapy is essential. In many cases the work site is the only practical means of intervention.

There are problems with only having alcoholic counseling since many people have multiple problems. The other troubled employees need to be helped too. Employees need to be assisted in problems other than their organic illnesses or traumatic injuries.

## VI. WORKERS' COMPENSATION

By 1908, compulsory compensation for employment related injuries was present in all western industrialized countries except the United States. Judicial resistance to forcing employers to pay without finding fault greatly slowed American adoption of workers' compensation; however, by 1920 virtually all states enacted some form of compensation plan. Primarily, these early plans were elective and mainly applicable to extremely hazardous occupations. In 1949, programs of income maintenance for work-related injury were in effect in all states; however, as recently as 1968, twenty-three states permitted elective coverage, twenty-four states had size-of-firm restrictions and twenty-nine excluded farm workers (24:7).

In the late 1960's, the federal government was instrumental in extending coverage to workers traditionally not covered by state systems.

Approximately ninety percent of American workers are presently covered by state and federal workers' compensation laws. Those not covered include farm workers, self-employed individuals, casual and domestic workers, and some state and local government employers (24:4).

In 1979, \$ 7.8 million awards for workers' compensation were made and six million (77%) of these awards were for medical payments. Most awards were for temporary or permanent disability; however, the 5.5 percent of awards for permanent disability or death accounted for 75 percent of the total paid benefits. The average premium for workers' compensation per one

hundred dollars of payroll increased from \$1.11 to \$1.80 during 1970's. This represents a sixty-two percent increase in premiums (40:18).

During the 1970's, selling workers' compensation insurance became substantially less profitable than in previous years. While the ratio of current benefits paid to current premiums received remained stable, the amounts required to be reserved for future payments to compensate current-year injuries rose sharply. The changing economics of workers' compensation have combined with changes in law, medical technology, and other factors to produce an unusual state of flux in most state systems.

The current status of workers' compensation in America reveals all but three states have compulsory laws, although each is usually tempered with exemptions. States generally limit compensable injuries to those arising out of and in the course of employment. Many states exclude injuries resulting from willful misconduct, aggressive assault and drunkenness; some states increase the compensation when the employer has willfully misbehaved.

Originally excluded from workers' compensation laws, occupational disease is now covered in all states; although the coverage may have several limitations. As a result of these limitations, only a tiny fraction of occupationally-related disease cases enters the workers' compensation system, and those cases that do are typically resolved by "compromise and release" statements (24:19).

Cumulative injury resulting from long term or repeated job related causes is an older category of injury than occupational disease. Recently, courts have expanded this definition to include conditions of reduced health that may result from natural, non-job-related causes. This definition expansion is justified under the established doctrine that an employer must "take the employee as he finds him" and compensate him for any exacerbation of a latent problem (24:39).

As these liberalizing trends continue, definitions of the scope of workers' compensation coverage are in a state of change. Linkage between occupations and cancer, heart disease, emotional disorders, and other health problems are difficult to prove or disprove. The number and kinds of illnesses determined to be job-related can greatly affect the cost of workers' compensation. For example, it is estimated that if one per cent of all cardiovascular deaths are included in the workers' compensation system, death claims would triple (24:48).

The amount and duration of disability benefits are set by the degree of the disability (partial/total) and by its duration (permanent/temporary). Statutory minimums and maximums of compensation and duration are common. Recent studies indicate that post-1972 benefit increases have been accompanied by increased numbers of claims and lengthened disabilities (6:77).

The most controversial type of benefit is that for a permanent partial disability. This type accounts for more than half of all benefits paid. These benefits also reflect the

greatest policy diversity among the states, particularly when non-scheduled injuries permit discretion as to compensation. Scheduled benefits are certain but insensitive to special circumstances. Non-scheduled benefits can be more sensitive but are much more volatile and uneven in application, yielding higher proportions of contested claims and compromise and release settlements.

All states now stipulate immediate care for injured workers, and almost all states have removed time and dollar ceilings on such expenses. Stipulations limiting the time elapsed between an injury and its manifestation have been eliminated.

Workers' compensation limits incentives to provide rehabilitation services for minor injuries by requiring the employee to prove the extent of the injury long after it has occurred and by increasing the employers' liability for reinjury of already partially disabled workers. Authorities agree that more effective rehabilitation efforts would result from coordination of medical and rehabilitation services, prompt claims settlement, and close supervision by the compensation agency (24:47).

Although it is estimated that one of ten American industrial workers suffers a work-related accident or disease each year, only one-third of these mishaps result in lost work time. Such injuries represent only a slightly higher risk than that presented by off-the-job living and well under half the risk presented by riding in an automobile (3:137).

Workers' compensation demands that each manufacturer enjoying the profit of a product should assume the costs of injuries. Each producer is motivated to lower accident costs to achieve a competitive advantage. Insurers generally seek to encourage safety by providing accident prevention engineering services and by using a two-tiered rating system which alters rates for larger companies according to their loss experience.

The dream of a self-administrating system has not been realized for three primary reasons. First, determinations of compensability and extent of disability are controversial. State agencies have not sufficiently participated in clarifying statutes and settling disputes, and finally, societal values have, over time, expanded the purview of the system and obscured the differences between its goals and those of other social insurance mechanisms (24:57).

## VII. ADMINISTRATION ASPECTS OF INDUSTRIAL MEDICINE PROGRAMS

As health benefits become more and more important to the American worker, it is also becoming equally important to employers. Union negotiators are often willing to forego short term wage increases, in exchange for increases, or even maintenance of current nonmonetary fringe benefits. The most recognized benefits in recent years are health benefits.

The employee perceives the health benefits to include medical and hospitalization coverage to absorb the costs of illness or injury; however, the employer has come to have a different outlook. Rather than wait for the employee to be sick or injured, employers, of varying size and scope, are pursuing preventive measures.

Employers approach their solutions from two main angles. One is a fully in-plant medical department. The other alternative is through some external contractual arrangement. Each alternative has a distinct set of advantages and disadvantages and possess specific administrative requirements.

In-plant occupational health programs are normally associated with large corporations or subsidiaries of large organizations. The plant must be sufficiently large enough to support a qualified medical department. Small organizations are not financially viable to absorb the costs of employed medical facilities and personnel.

The medical department must not be a "tool" of management. This situation must neither be actual or perceived by the

employers. The medical department must be established and maintained for the employees.

To follow on this point, the employees must have the utmost confidence in the department. This can be facilitated by having highly competent personnel available in the occupational medicine department.

The utilization of an in-plant medical department requires an extensive medical records function. The records must contain historical and current data, be complete and be confidential. The contents of the medical records cannot be the subject of intraorganizational gossip.

Finally, the cooperation between management and organized labor unions is essential for internal occupational medicine operation to succeed. Close adherence to contract specifications and company regulations is required by all parties (27:409).

As noted in these basic requirements for the in-plant medical department, many administrative and logistical problems must be confronted and resolved. As previously noted, usually only the large, well financed organizations can afford the in-plant services. Small entities may at first believe they can afford a limited in-plant operation, however, over time, the demands made by employees and unions on the medical department will increase. Ultimately the small company will either expand its services at great expense or remove its in-plant medical department after substantial sunk costs are encountered.

Many companies may wish to have some services available within the plant and other services accomplished outside the company boundaries. If this is desired, it should be accomplished at the outset of the program. Later changes to the location of and access to the medical services often results in confusion and ill-will between management and employees (27:409).

Before deciding to initiate an in-plant occupational medicine department, management must determine if they are capable to provide numerous basic programs. These services include:

- a. A method for evaluating new applicants.
- b. Preplacement and periodic examinations for certain strenuous and hazardous jobs.
- c. Medical care for non-work related emergency sickness or accidents.
- d. Complete care for work related injury or illness.
- e. Advice to operating departments on specific employee's ability to perform specific jobs and tasks.
- f. Advice to operating departments concerning employees returning from disability.
- g. Participate in absence control program.
- h. Present rehabilitative programs for emotionally ill employees, alcoholics and drug abusers.
- i. Advice to departments concerning long term health effects of present working conditions.
- j. Advice to departments concerning government regulations.

- k. Health advice to employees and their families on proper entry into the medical care system.
- l. Development of an employee health education program.
- m. Provide research of medical literature.
- n. Involved in teaching the aspects of occupational medicine.
- o. Active participation in organizational safety programs.
- p. Participation as a satellite of a Health Maintenance Organization operation.
- q. Advise management on desirability and feasibility of health care insurance packages.

If the company is not willing to devote sufficient resources to ensuring the in-plant medical services are capable of administering this list of duties, services should be procured from outside sources (27:411).

With all of the above requirements placed on in-plant medical departments, it is assumed that companies would normally reject the on-site approach. The expenses, extra administrative workload and additional personnel resources often force organizations to seek outside assistance with their occupational health needs.

Regardless of these obvious disadvantages, there are numerous advantages to in-plant medical services. The immediate availability of medical services by an employed physician is a prime benefit. Delays in receiving care due to transportation or logistical problems are eliminated. The physician, by interacting with only one company, will be well educated and

familiar with the job related tasks, policies, union contracts and benefit plans. This is a definite advantage over a contracted physician or medical service.

Through daily exposure to the business environment, the physician becomes aware of the problems of the company. Additionally he/she can devote more time to developing expertise in the administration of the medical department. These points are absent from a contractual arrangement.

Additional advantages of an on-site medical department include:

- a. The employed physician will probably demonstrate a strong sense of loyalty to the corporation, the employees and the union, because he/she is part of the team.
- b. The employed physician is likely to be a stable, long term employee.
- c. The on-site physician will develop a beneficial rapport with the management, employees and union officials.
- d. The employed physician will actively participate in decisions regarding the health, welfare and safety of employees.
- e. As warranted, the on-site physician will have the ability and authority to bring problems to the attention of top management. These advantages must be counterbalanced with the high costs of an on-site program (27:409).

Some corporations attempt to reduce their expenses by contracting a physician to work part time in the plant. When this occurs, many of the advantages associated with a full time,

on-site physician no longer exist and most, if not all, of the advantages are certainly modified (27:409).

Regardless of full time or part time physicians, on-site or remote facilities, employed or contracted personnel, the necessity for accurate, timely and complete medical information is a critical requirement to occupational medicine programs. Organizational and administrative skills are necessary to obtain, store and retrieve medical information. Without these capabilities, the full benefits of occupational medicine programs are not realized.

The first step is gathering information from the employee, and the second is keeping the administrative data current. Employees possibly dislike nothing more than completing the same form every three to six months.

To combat this administrative problem, current literature suggests several guidelines. The forms should be concise yet thorough. All necessary information must be obtained, but the employee should not be required to give superfluous data.

Checklists should be used, rather than requiring the employee to write lengthy replies. The less time required of the employee, the higher the probability for obtaining the needed information. The solicitor must emphasize and be convincing on the issue of confidentiality. Individuals will give more specific data if they are assured it will not be publicized.

Finally, great emphasis must be placed on the fact that the information is being collected for the employee's benefit, not

for the nurse, doctor or employer. This fact must be well publicized and frequently reinforced (41:25).

From this starting point of basic employer administrative and medical data, the occupational medicine function (rather on-site or remote) can build an extensive worker-medical file. As the occupational medicine horizons expand, the necessity for more accurate data accumulation, storage and retrieval are recognized. Computer assistance is rapidly becoming the norm for medical information in the occupational medicine environment (5:353).

Most doctors readily agree that the medical history is the single most important element of the physician-patient interaction; however, it is extremely time consuming and often very difficult to keep current (23:26). The use of a cathode ray tube (CRT) with pre-programmed text and data base interfacing facilitates accumulation of patient history, updating and results in positive patient reactions (23:25).

Additionally, functional worksheets provide the physician and other medical personnel with the capability to record examination information and easily enter the data into the medical computer (47:459). With well designed worksheets which are simple for transcription; eliminate redundancy; provide the capability to enter raw data; reduce the factor for human-error; and are detachable for recording efficiency, personnel costs are kept at a minimum, and administrative accuracy and efficiency are maximized (31:201).

STATEMENT OF HYPOTHESES

The purpose of any scientific analysis is to test the validity of a formal set of hypotheses or propositions. Before the researcher designs an instrument to adequately test these propositions, the purposes for the test must be clearly defined. The purpose for this research project is to test the following hypotheses, indicating the null and alternate hypotheses for each area to be tested.

I. There is a significant relationship between size of the firm and the degree of interest for each occupational health program.

$H_0$ : No relationship exists between firm size and degree of interest in each program.

$H_1$ : Larger firms are more likely to be interested in each health program than the smaller firms.

II. Categories of insurance cost per employee will correlate to the degree of interest for each health program.

$H_0$ : No relationship exists between a firm's health insurance cost per employee and the degree of interest in each health program.

$H_1$ : Firms with high health insurance cost per employee are more likely to be interested in each health program than firms with a low cost per employee.

III. Percentage increase in health related costs over the last five years will correlate with the degree of interest for each health program.

$H_0$ : No relationship will exist between a firm's percentage increase in health-related costs over the last five years and degree of interest in each program.

$H_1$  Firms with a high percentage increase in health-related costs are more likely to have an interest in each program than firms of a low percentage increase.

IV. If 50% or greater of a firm's workforce is dedicated to a given occupational category, the interest in specific health programs is significantly higher than those reporting less than 50%.

$H_0$ : No relationship exists between a high percentage involvement (50% or greater) in each occupational category and the level of interest in each health program.

$H_1$ : Firms indicating a 50% or greater employee involvement in each occupational category are more likely to show a higher interest in certain health programs than those firms with involvement at less than 50%.

V. Male and Female composition of employees will not change the firm's level of interest for each health program.

$H_0$ : There is no relationship between the sex composition of the firm and the level of interest in each health program.

$H_1$ : Higher percentage of males than females will result in a higher degree of interest for each program.

VI. The length of time a firm has been in the area will correlate to the level of interest for each health program.

$H_0$ : No relationship exists between the length of time the firm has done business in the area and the degree of interest for each program.

$H_1$ : Firms indicating a longer length of time in the business community will have a higher level of interest in each health program.

VII. A firm with a written health policy will demonstrate a significantly higher level of interest in health programs.

$H_0$ : No relationship exists between a firm having a written health policy for employees and the level of interest in each health program.

$H_1$ : Firms with a written health policy will show a higher level of interest in specific health programs than those firms that do not have such a policy.

VIII. A firm that currently does not offer each of the health programs will have a corresponding moderate to low level of interest. A firm that currently offers a specific program will have a corresponding high to very high level of interest in that program.

$H_0$ : A Firm's level of interest in each program will not be directly correlated to whether the health program is being offered or not.

$H_1$ : There exists a direct relationship between high level of interest in a program and current offering of a program. Low level of interest will correspond with a firm not offering the program.

IX. A high percentage of total payroll for health benefits correlates to a higher level of interest in health programs.

$H_0$ : No relationship exists between high expenditure for health benefits and level of interest for each program.

$H_1$ : Firms experiencing a high percentage of payroll for health benefits will demonstrate a high level of interest for each health program.

## Chapter II

### METHODOLOGY

#### Sample Selection and Description

The base of operations for this research work is Parkway Regional Hospital, located in Douglas County, Georgia. Because of the location of the facility, the research group selected its sample area focused on the proximity and usefulness to Parkway Hospital.

The research group surveyed the area surrounding Parkway Hospital and established a fifteen minute driving distance radius as the outer limit for data gathering. This criteria was selected as the maximum driving distance a worker or employer would drive for employment related health and medical care. Driving time, rather than mileage, was used because of the location of the facility in relation to the interstate highway system.

Upon determining the area of concern, the research group compiled a list of businesses, industries and corporations within this perimeter. Primary emphasis was directed to the Fulton Industrial Area in zip code 30336.

Compiling specific names of companies was the first and possibly the most difficult task facing the research group. There is not a comprehensive listing of industrial/office park residents for the area of concern. The research group was required to compile a listing of all known businesses in the area before any sampling decisions were possible.

Parkway Regional Hospital possessed lists of industrial medicine clinics and their clients. Unfortunately, these listings did not provide the addresses or industrial park locations. Many of the corporations are located in various parts of the greater Atlanta area, and others had numerous branch offices and sites.

To compile a telephone/address reference list, the research group cross-matched the name of the company with the Atlanta Telephone Directory and a street map of Atlanta. This process produced 311 businesses in the area of concern.

From this list the research group called each company to verify the address, zip code and insure the organization was in operation. Additionally, the name of the chief executive officer for each business was obtained for future use and reference.

This step reduced the number of candidates for survey to 282. The research group determined that a sample of this population would probably be ineffective because of the many different types of organizations in the industrial parks. For this reason, the research group decided to survey the entire population.

The research team developed a questionnaire to measure the population's perception, needs and wants for industrial medicine programs within the area of concern. A copy of the questionnaire is in the Appendix.

The survey form requested the number of employees, number of both females and males, number of executives, ownership, location and type of industry involvement. This provided the research team with insight into the demographics of the business. Analysis of this data will show the large organizations, their employee mix, and the main work activities.

The survey also requested information concerning the policies, procedures, regulations, expenditures, and categories of health costs. This information provided background data regarding the importance of employee health care to management, and the cost of these programs.

Next, the survey requests information concerning a number of health programs. This is a two part question. First, each company indicates if the specific program is presently offered. Second, the company reveals its degree of interest (very high, high, moderate, low) in each program. The degree of interest is provided whether or not the program is currently available. The specific health programs are executive physicals, pre-employment physicals, back-to-work evaluation, occupational nursing services, immunization services, pulmonary screening, annual chest x-ray services, audiology screening, cardiopulmonary resuscitation training and choke-saving, cancer screening, proper lifting technique classes, O.S.H.A. orientation program-safe work

practices and industrial hygiene, back pain program, blood pressure screening, preventative alcohol and chemical dependence program, stress management program, weight control program, nutritional program, smoking cessation program, exercise program, health assessment/evaluation services and on-site medical director.

In addition to the health programs, the survey requested the same information from each respondent concerning assistance and administrative programs. This information provided the research group with additional information relating to the total industrial medicine needs of the industries. The specific programs are marriage counseling, alcohol/drug rehabilitation, psychiatric counseling, financial management counseling, employee health record maintenance and centralized billing of services.

Finally the survey requested the company to specify the level of approval (local, corporate headquarters) required for any changes in their present industrial medicine programs. This information targeted the ease of implementation of specific plans for the research group.

The questions were designed to be analyzed with the aid of a computer, therefore, most responses were either yes or no, rating, or rank order. No written responses were asked because these could not be computer analyzed. An even number was chosen for the rating questions to force persons to make a choice. An odd number encourages noncommittal, middle-responses. Questions were reviewed for clarity. Selected terms were defined on the survey. ~~Comments, observations, and suggestions from the pretesting were used.~~

and several additional categories were added because of this pretesting.

Upon finalization of the survey instrument, the first mailing to the selected population was made. To insure confidentiality, a self-addressed card was enclosed with the questionnaire. Respondents were requested to separately return the postcard when the survey instrument was completed and mailed. This procedure allowed the research group to know the specific organizations responding, eliminate duplication of effort during second and subsequent mailing, and, as previously noted, insure confidentiality for the respondent.

Several procedures were implemented to improve the number of responses. First, the correspondence was personalized. Letters were addressed to the chief executive or the person responsible for health benefits. These names were previously secured with telephone calls. Second, an effort was made to show the survey was benefiting a local hospital. A cover letter from Solon Boggus, Jr., Administrator of Parkway, under his letterhead, stated that the survey would be used for planning at the hospital. Third, the survey was type set on a four page, 8 1/4 inch by 33 inch page. This was to convey that the survey was legitimate. It made the survey easy to read, understand, and fill out. Fourth, a bonus was offered for completing the survey. Participating firms were offered a summary of the results. Fifth, follow-up mailings were made.

The research group conducted three mailings. The second mailing was accomplished approximately three weeks after the

first mailing. The third mailing was approximately three weeks after the second. Of the 282 firms surveyed a total of 58 responses were received. Of these 56 were useable. This is 19.9% (56 of 282) of the total number of firms in the area. The nearly 20% response rate should give data which represents the views of firms in the survey area.

In addition to the questionnaire, twenty randomly selected businesses were designated for an on-site interview. To insure a random sample the 282 firms in the research area were divided by the 20 interviews to give an interval of 14. The first company was selected at random. The other firms were taken at the fourteenth interval. A questionnaire was developed which each of the four interviewers used. The purpose of the personal interview was two fold. First, it assisted in verifying the validity of the questionnaire, and second, the interview permitted additional verbal information to supplement the questionnaire.

#### The Study Design

The study has a set of hypotheses. Data is collected to support or disprove these hypotheses. There are eleven hypotheses stated in chapter one, and are stated in scientific form with both a null and alternate hypothesis for each. To analyze these hypotheses a survey was conducted. The previous section describes the selection of the sample area and the design and execution of the survey instrument. The results were analyzed using Chi Square. (See the following section for a discussion of the analytical techniques used.) The data was

analyzed for the relationship in each hypothesis, and key observations noted. As a subjective validation of the survey instrument, personal interviews were conducted with 20 firms. Additionally, a literature review was conducted to verify the industry's response. A summary, conclusion, and recommendations were made from the supporting data and literature review.

#### Analytical Techniques Used

The data from the survey was analyzed using the Statistical Package for the Social Sciences (SPSS). It is an integrated system of computer programs designed for the analysis of social science data and enables students and researchers to perform many different types of data analysis. SPSS was developed with the close cooperation of practicing social science researchers, computer scientists, and statisticians.

First one-way frequency tables were computed to give frequencies for the data. Next an analysis of the relationship between interest in each of the 28 health programs and each of the eleven hypothesis was tested. The chi-square tested the statistical significance between the two variables with the relationship depicted in a cross tabulation table. The chi-square computes the cell frequencies which would be expected if no relationship is present between the variables in the given row and column totals. The expected cell frequencies are then compared to the actual values found in the table according to the formula:

$$X = \sum_i \frac{(f_{oi}^1 - f_{ei}^1)^2}{f_{ei}^1}$$

where  $f_{oi}^1$  equals the observed frequency in each cell, and  $f_{ei}^1$  equals the expected frequency calculated by  $f_{ei}^1 = (c_i r_i) / N$  where  $c_i$  = frequency in a column marginal,  $r_i$  = frequency in a row marginal, and  $N$  = total number of valid cases. Thus the larger the discrepancy between the expected and actual frequencies, the larger  $X$  becomes. A large  $X$  implies statistically that a systematic relationship exists between the variables.

The degrees of freedom vary with the number of rows and columns in the table. They are important because the probability of obtaining a specific  $X$  value depends on the number of cells in the table. To determine whether a systematic relationship exists, it is necessary to determine the probability of obtaining a value of  $X$  as large or larger than the one calculated from the sample. This depends in part on the degrees of freedom which are computed by SPSS.

In the example the  $X = 16.52852$ . The probability of obtaining a value this large or larger with 1 degree of freedom is .0001, or 1 chance in 1,000. This is the significance or p value. Since by chance it occurs in only 1 sample out of 1,000, we conclude that a systematic relationship occurs which is statistically significant at the .0001 level. In the analysis a statistical relationship was concluded if  $p \leq .05$ , or 5 chances in 100. Further analysis was done on the data when a discernable

pattern could be detected, even when there was no statistical relationship, a practical relationship was established.

Referring to the example, the first number in each cell is the raw number of respondents. The second number is the percentage of the total in the row. The third number is the percentage of the total in the column. The total number of observations or N is 56.

The expected value must be validated if the  $X$  is to be used. The expected value is each column multiplied by each row and divided by the number of observations. No expected value must be less than one, nor should 20% be less than 5. If either condition is not met, the chi-square cannot be used. This was calculated by hand since the computer did not do it.

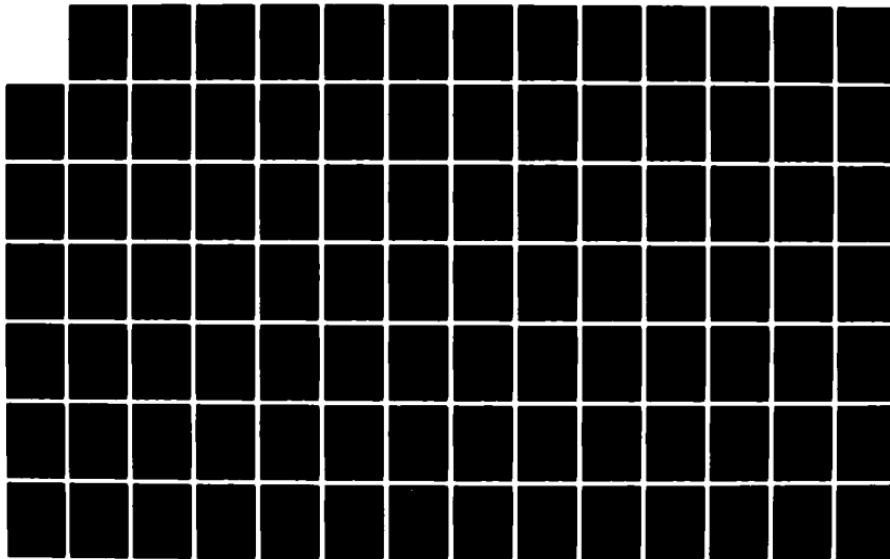
The tables in chapter 3 display the data from the cross tabulations. Only the significant data with validated expected values is displayed. Included in tables are  $X$ ,  $p$ ,  $N$ , and row and column percentages.

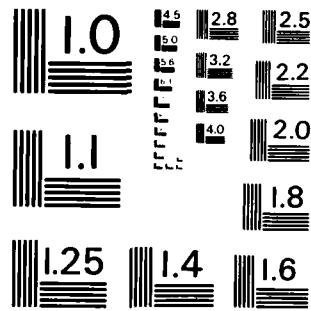
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PARKWAY'S INDUSTRY (U) AIR FORCE INST OF TECH  
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MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS - 1963 - A

## Example

Cross tabulation of Firms Offering OSHA Orientation Programs  
by Firms Interested in OSHA Orientation Program

| Chi-Square                   |     | Interest              |                       | Raw Total   |
|------------------------------|-----|-----------------------|-----------------------|-------------|
| Offering<br>OSHA Orientation | YES | Low, Moderate         | High, Very High       | Raw Total   |
|                              |     | 0<br>0%<br>0%         | 15<br>100.0%<br>51.7% | 15<br>26.8% |
|                              | No  | 27<br>65.9%<br>100.0% | 14<br>34.1%<br>48.3%  | 41<br>73.2% |
| Column Total                 |     | 27<br>48.2%           | 29<br>51.8%           | 56<br>100%  |

Chi Square = 16.52852 with 1 degree of freedom.  
Significance = .0001

Number of missing observations = 3

Problems and Limitations

There were two significant problems with the data. The first was the failure to specify a time period for the cost estimate in question 10 on the sample. The question read, "What was your health insurance cost per employee in 1981? (Estimate if exact cost is not available.) \_\_\_\_\_" The responses were either under \$200 or over \$600. Thus it is apparent that some interpreted this to mean per month, while others considered per year. This seriously limits the value of analyzing that hypothesis.

A second problem was the large number of people who did not respond to the degree of interest when they did not offer a program. Out of 56 returned surveys about 35 gave an indication of their interest. This is 38% non-responses.

While not a significant problem, a limitation of the survey was the general lack of interest in the health programs. This lack of interest was a primary reason the expected value could not be validated in many of the chi-square cross tabulations. Thus their results could not be used statistically. The survey showed a general disinterest.

Approximately 20% of the firms in the survey responded. Although this is a good response, information about the other 80% is needed, and particularly the number of employees of the nonrespondent is needed. Only their approximate size is known. For planning purposes, a larger response rate would be helpful. This would eliminate some uncertainty from the conclusions.

The survey gave no provision for "no" or "0" response. The survey read for each health program, "your degree of interest, very high (4), high (3), moderate (2), low (1)." The four categories were chosen so there would not be an odd number of response, with a middle or neutral number. Yet when one marks "low" it is unclear if this means absolutely no interest, or low interest.

The number of problems or limitations does not invalidate the survey. The limitations are small, and the survey is a valid scientific instrument with results which can be accepted.

## CHAPTER III

### PRESENTATION AND ANALYSIS OF THE DATA (INCLUDING ITS INTERPRETATION)

#### Fulton Industrial Environment

The responses from fifty-nine firms representing fifty-three percent of the employee population indicate the following environment in the Fulton Industrial Area.

#### Male vs. Female

- o predominately male population (2739 or 62% of total)
- o female population (1697 or 38% of total)
- o mean of male employee per firm: 49
- o mean of female employee per firm: 30

Note: The discrepancy among the total number of employees (8470) and the sum of male and female employees (4436) is not easily determinable; however, there is an indication that three respondents did not provide a break-out of male and female employees. One of the three firms reported three thousand employees. The research group excluded this report believing it to be an error. The other firms have over four hundred employees each.

**Total Employees Represented (5470)**

- o 50% of respondents reported 40 or less employees
- o 75% of respondents reported 109 or less employees
- o 97% of respondents reported 525 or less employees

**Number of Executives**

- o 53% of respondents had 3 or fewer executives

**Type of Industry (listed in order of predominance)**

- o Office - Sales
- o Light Manufacturing
- o Other Category
- o Warehousing - Distribution - Light
- o Warehousing - Distribution - Heavy
- o Heavy Manufacturing
- o Chemical Processing and Handling

**Percent Increase in Health Care Costs Since 1977**

- o 44% of respondents indicated a 50% or less increase
- o 87% of respondents indicated a 100% or less increase
- o 41% of respondents indicated a 98% or greater increase.

**Years Company Has Been In The Area**

- o Mean of 15 years
- o 49% of respondents have been in the area 10 or less yrs.

**1981 Annual Health Insurance Cost Per Employee**

- o only 37 respondents in this category
- o 23% of respondents reported a cost of \$1000 or greater
- o 59% of respondents reported a cost of \$400 or greater

**Percent Total Payroll for Health Benefits**

- o only 30 respondents in this category
- o mean of 9.7%
- o 70% of respondents reported 10% or less

### Five Major Cost Categories of Health Costs

- o Clearly the respondents believe the cost of employee benefit coverage contributes the highest to health costs (78%)
- o The second highest perceived contributor is family benefit coverage costs (43%)
- o Though not quite as strong, respondents felt workers compensation is a slightly lower amount to health care costs for the company.
- o The fourth is Absenteeism.
- o The fifth is Accident/Sick Pay.

|                              | <u>Highest Cost</u> |           |            |            | <u>Lowest</u> |           | <u>Total</u> |
|------------------------------|---------------------|-----------|------------|------------|---------------|-----------|--------------|
|                              | <u>1</u>            | <u>2</u>  | <u>3.0</u> | <u>3.5</u> | <u>4</u>      | <u>5</u>  |              |
| EMPLOYEE BENEFIT<br>COVERAGE | 22<br>42%           | 19<br>36% | 7<br>13%   | 1<br>2%    | 4<br>3%       | 5<br>1%   | 53<br>100%   |
| FAMILY BENEFIT COVERAGE      | 13<br>25%           | 15<br>18% | 10<br>19%  | -<br>-     | 5<br>9%       | 10<br>19% | 53<br>100%   |
| WORKERS COMPENSATION         | 7<br>13%            | 8<br>15%  | 17<br>32%  | 1<br>2%    | 7<br>13%      | 13<br>25% | 53<br>100%   |
| ABSENTEEISM                  | 9<br>17%            | 5<br>9%   | 8<br>15%   | 1<br>2%    | 14<br>26%     | 16<br>30% | 53<br>100%   |
| ACCIDENT/SICK PAY            | 2<br>4%             | 5<br>9%   | 9<br>17%   | 1<br>2%    | 25<br>11%     | 47<br>21% | 53<br>100%   |

### Programs Now Offered

At least 28% of companies offer:

|                          |         |
|--------------------------|---------|
| Executive Exams          | (32.2%) |
| Pre-Employment Physicals | (40.7%) |
| Back-to-Work Evaluations | (44.1%) |
| OSHA Orientation Program | (28.8%) |

At least 10% of companies offer (in addition to above):

|                             |         |
|-----------------------------|---------|
| Immunization Services       | (11.9%) |
| CPR Training                | (11.9%) |
| Lifting Technique           | (22.6%) |
| Alcohol/Drug Rehabilitation | (15.3%) |
| Centralized Billing         | (10.2%) |

Programs Receiving High to Very High Interest:

|                             |    |             |       |
|-----------------------------|----|-------------|-------|
| o Executive Exams           | 26 | Respondents | (46%) |
| o CPR/Choke Training        | 29 | "           | (51%) |
| o OSHA Orientation          | 29 | "           | (51%) |
| o Lifting Technique         | 25 | "           | (44%) |
| o Back Pain Program         | 25 | "           | (44%) |
| o Stress Management Program | 24 | "           | (42%) |
| o Back-to-Work Evaluation   | 24 | "           | (42%) |

Programs Receiving High to Very High Interest but Few Companies Offer:

|                       |                            |       |
|-----------------------|----------------------------|-------|
| o CPR Training        | (51 companies don't offer) | (89%) |
| o Lifting Technique   | (45 " " "                  | (79%) |
| o OSHA Orientation    | (41 " " "                  | (72%) |
| o Back Pain Program   | (55 " " "                  | (96%) |
| o Stress Mgmt Program | (56 " " "                  | (98%) |

Programs Receiving Moderate to Very High Interest but Few Companies Offer:

|                                    | Number of Responses<br>With Moderate To<br>Very High Interest | Number Offered |
|------------------------------------|---------------------------------------------------------------|----------------|
| o Executive Physicals              | 35 of 55 responses                                            | 19 of 38       |
| o Pre-Employment Physicals         | 36 of 54 "                                                    | 24 of 34       |
| o Back-to-Work Evaluation          | 36 of 56 "                                                    | 6 of 32        |
| ooo CPR/Choke Training             | 40 of 57 "                                                    | 7 of 51        |
| o Cancer Screening                 | 33 of 57 "                                                    | 1 of 57        |
| oo Lifting Technique               | 37 of 58 "                                                    | 13 of 45       |
| oo OSHA Orientation                | 37 of 56 "                                                    | 17 of 41       |
| ooo Back Pain Program              | 32 of 58 "                                                    | 3 of 55        |
| oo Blood Pressure Screening        | 35 of 57 "                                                    | 4 of 53        |
| oo Preventative Dependence Program | 33 of 57 "                                                    | 4 of 53        |
| ooo Stress Management              | 35 of 57 "                                                    | 2 of 56        |
| oo Exercise Program                | 32 of 57 "                                                    | 1 of 57        |

Note:

ooo Denotes programs requiring primary attention. Respondents indicate a moderate or very high degree of interest, but a small number of firms presently have the program.

oo Denotes programs requiring secondary attention at the present time.

o Denotes programs requiring minimal attention at the present time.

#### Low Level of Interest

The analysis of the data is significantly influenced by the low level of interest in many of the health programs. The interest was so low in many instances that the data could not be used statistically in analyzing the hypothesis. (The expected value in the chi square could not be validated because some of the cells had small numbers.)

Two programs had high or very high interest from over 50% of the respondents.

#### The Number With Very High & High Interest

|                          |    |
|--------------------------|----|
| OSHA Orientation Program | 29 |
| CPR/Choke Training       | 29 |

Five programs had high or very high interest from 40-50% of respondents.

|                          |    |
|--------------------------|----|
| Executive Physicals      | 26 |
| Back Pain                | 25 |
| Lifting Classes          | 25 |
| Stress Management        | 24 |
| Back-to-Work Examination | 24 |

Five programs had high or very high interest from 30-40% of respondents.

|                                   |    |
|-----------------------------------|----|
| Blood Pressure Screening          | 19 |
| Exercise                          | 17 |
| Cancer Screening                  | 17 |
| Pre-employment Physicals          | 17 |
| Preventive Alcohol & Drug Program | 17 |

Three programs had high or very high interest from 20-30% of respondents.

|                        |    |
|------------------------|----|
| Weight Control Program | 13 |
| Pulmonary Screening    | 12 |
| Audiology Screening    | 11 |

Ten programs had high or very high interest from 10-20% of respondents.

The Number With  
Very High & High Interest

|                               |    |
|-------------------------------|----|
| Smoking Cessation Program     | 10 |
| Health Assessment             | 10 |
| Alcohol/Drug Rehabilitation   | 9  |
| Nutritional Program           | 9  |
| Annual Chest X-Ray            | 9  |
| Financial Counseling          | 8  |
| Employee Health Recordkeeping | 8  |
| Centralized Billing           | 8  |
| Psychiatric Counseling        | 7  |
| Immunization                  | 7  |

Three programs had high or very high interest from less than 10% of respondents.

|                      |   |
|----------------------|---|
| Occupational Nursing | 4 |
| Medical Director     | 3 |
| Marriage Counseling  | 3 |

Note: See Appendix A for full frequencies of degree of interest.

Presentation and Analysis of DataHypothesis I: A FIRM'S SIZE VERSUS INTEREST

$H_0$ : No relationship exists between firm size and degree of interest in each program.

$H_1$ : Larger firms are more likely to be interested in each health program than the smaller firms.

## Key Observations:

- \* Three areas - CPR/choke, lifting, and backpain - have a statistical relationship between increased interest and increases in a firm's size.
- \* Three areas - Executive physicals, back-to-work, and chemical dependence - have a practical relationship between increased interest and increases in a firm's size.
- \* Exercise has a practical relationship between decreased interest and increases in a firm's size.
- \* Three areas - OSHA, blood pressure, and stress - have no relationship between interest and a firm's size.
- \* In eight areas there is not enough interest to validate the expected value.

## Analysis:

The relationship between a firm's size and its interest varies with specific programs. Only in one area, exercise, is there an inverse relationship. In six areas - CPR/choke, lifting, backpain, executive exam, back-to-work, and chemical dependence there is a positive relationship between increased interest and increased size.

## CHI SQUARE

## Hypothesis I. Analysis of Association Between Size of Firms and Interest In Health Programs

| Health Program                 | X <sup>2</sup> | P       | Number of Employees |          |         | Total/Interest     |    |
|--------------------------------|----------------|---------|---------------------|----------|---------|--------------------|----|
|                                |                |         | 1-24                | 25-99    | 100+    | High-<br>Very High | N  |
| Executive Physicals            | .43767         | .8035   | 830.8%              | *1246.2% | 623.1%  | 2647.3%            | 55 |
| Back-to-Work Exams             | 3.89667        | .1425   | 416.7%              | 1145.8%  | 937.5%  | 2442.9%            | 56 |
| CPR/Choke Training             | 6.27439        | **.0434 | 517.2%              | 1241.4%  | 1241.4% | 2950.9%            | 57 |
| Cancer Screening               | .32050         | .8519   | 423.5%              | 847.1%   | 529.4%  | 19.8%              | 57 |
| Lifting Techniques             | 7.11245        | **.0285 | 312.0%              | 1144.0%  | 1144.0% | 343.1%             | 58 |
| OSHA Orientation               | 1.69480        | .4285   | 724.1%              | 1137.9%  | 1137.9% | 11.8%              | 56 |
| Back Pain Program              | 5.47123        | **.0649 | 416.0%              | 1040.0%  | 1144.0% | 143.1%             | 58 |
| Blood Pressure                 |                |         |                     |          |         |                    |    |
| Screening                      | .97059         | .6155   | 421.1%              | 842.1%   | 736.8%  | 55                 | 57 |
| Preventive Chemical Dependence |                |         |                     |          |         |                    |    |
| Stress Management              | 3.48237        | .1753   | 211.8%              | 847.1%   | 741.2%  | 1729.8%            | 57 |
| Exercise                       | 1.39309        | .4983   | 520.8%              | 1250.0%  | 729.2%  | 2442.1%            | 57 |
|                                | 4.27284        | .1181   | 529.4%              | 1058.8%  | 211.8%  | 1729.8%            | 57 |

Degrees of freedom = 2

\*The first number is the raw number of respondents. The percentage is the percent of the total number of high-very high respondents.

\*\*The alternate hypothesis is accepted.

The following programs had insufficient interest to validate the expected value: Pre-employment physicals, occupational nursing, immunization, annual chest X-ray, audiology screening, weight control, nutrition, smoking cessation, health assessment, medical director, marriage counseling, alcohol/drug rehabilitation, psychiatric counseling, financial counseling, employee health recordkeeping, and centralized billing.

Hypothesis II: FIRM'S INSURANCE VERSUS INTEREST

$H_0$ : No relationship exists between a firm's health insurance cost per employee and the degree of interest in each health program.

$H_1$ : Firms with high health insurance cost per employee are more likely to be interested in each health program than firms with a low cost per employee.

**Key Observations:**

- \* There is a significant problem with the survey. The question did not specify the period--whether a month or a year. Also there were 22 missing observations. These missing observations may be attributable to the confusion of the time period of insurance costs.
- \* As a firm's health insurance costs increase the number of programs now offered increases.
- \* There is no practical or statistical relationship between a firm's insurance cost per employee and increased interest in health programs.

Data Display

|                 |           | <u>Programs offered</u> |            |           |              |          |
|-----------------|-----------|-------------------------|------------|-----------|--------------|----------|
|                 |           | <u>0</u>                | <u>1-4</u> | <u>5+</u> | <u>Total</u> | <u>N</u> |
| Insurance Costs | \$0-\$499 | 838%                    | 943%       | 419%      | 2157%        | 37       |
|                 | \$500+    | 213%                    | 1169%      | 319%      | 1643%        | 37       |

|                 |           | <u>Number Programs Interested</u> |            |            |            |              |          |
|-----------------|-----------|-----------------------------------|------------|------------|------------|--------------|----------|
|                 |           | <u>0</u>                          | <u>1-4</u> | <u>5-9</u> | <u>10+</u> | <u>Total</u> | <u>N</u> |
| Insurance Costs | \$0-\$499 | 419%                              | 419%       | 733%       | 629%       | 2157%        | 37       |
|                 | \$500+    | 16%                               | 638%       | 425%       | 531%       | 1643%        | 37       |

Question: "What was your health insurance cost per employee in 1981% (Estimate if exact cost is not available.) \$ \_\_\_\_\_. "

## CHI SQUARE

## HYPOTHESIS II. Analysis of Association Between Firm's Insurance Cost per Employee and Interest in Each Health Program

| Health Program      | Insurance Cost Per Employee |          |              | Total       |                            |          |
|---------------------|-----------------------------|----------|--------------|-------------|----------------------------|----------|
|                     | <u>X<sup>2</sup></u>        | <u>P</u> | <u>0-499</u> | <u>500+</u> | <u>High-<br/>Very High</u> | <u>N</u> |
| Executive Physicals | .03396                      | .8538    | *1058.8%     | 741.2%      | 1748.6%                    | 35       |
| Back-to-Work Eval.  | .15604                      | .6928    | 1164.7%      | 635.3%      | 1747.2%                    | 36       |
| CPR/Choke Training  | .44456                      | .5049    | 1150.0%      | 1150.0%     | 2259.5%                    | 37       |
| Cancer Screening    | .12857                      | .7199    | 650.0%       | 650.0%      | 1233.3%                    | 36       |
| Lifting Techniques  | .44456                      | .5049    | 1066.7%      | 533.3%      | 1540.5%                    | 37       |
| OSHA Orientation    | 0                           | 1.0000   | 1157.9%      | 842.1%      | 1954.3%                    | 35       |
| Back Pain Program   | .07874                      | .7790    | 1062.5%      | 637.5%      | 1643.2%                    | 37       |
| Blood Pressure      |                             |          |              |             |                            |          |
| Screening           | .41624                      | .5188    | 969.2%       | 430.8%      | 1336.1%                    | 36       |
| Stress Management   | .07961                      | .7778    | 952.9%       | 847.1%      | 1747.2%                    | 36       |
| Exercise            | .12857                      | .7199    | 866.7%       | 433.3%      | 1233.3%                    | 36       |

Degrees of freedom = 1

\*The first number is the raw number of respondents. The percentage is the percent of the total number of high-very high respondents.

The following programs had insufficient interest to validate the expected value: Pre-employment physicals, occupational nursing services, immunization services, pulmonary screening, annual chest X-ray services, audiology screening, preventive alcohol and chemical dependence program, weight control program, nutrition program, smoking cessation program, health assessment and evaluation service, medical director (on site), marriage counseling, alcohol/drug program, psychiatric counseling, financial management counseling, employee health records and centralized billing of services.

HYPOTHESIS III: PERCENTAGE INCREASE IN HEALTH COSTS VERSUS INTEREST

$H_0$ : No relationship will exist between a firm's percentage increase in health-related costs over the last five years and degree of interest in each program.

$H_1$ : Firms with a high percentage increase in health-related costs are more likely to have an interest in each program than firms of a low percentage increase.

Key Observations:

- \* The following health programs indicated practical significance between the increase in health costs since 1977 and a high or very high interest in the individual health program: executive physicals; back-to-work evaluations; CPR/choke training; lifting techniques; OSHA orientation program; back pain program; and stress management program.
- \* The following health programs possessed sufficient expected values to warrant Chi squared evaluations: executive physicals, back-to-work evaluations; CPR/choke training; lifting techniques; OSHA orientation program; and back pain program.

Questions Asked:

The data used in testing the above hypothesis required the cross tabulation of the responses to two questions. One part required the respondent to indicate the company's degree of interest in each of twenty six health and assistance programs. The degree of interest was given as very high, high, moderate and low.

Additionally, a separate question was asked to obtain data concerning the percentage increase in health costs in the previous five years. The question read:

"Estimate the percent increase your firm has experienced in health related costs since 1977 (that is, in the last five years).

Note: Percent increase =  $100 \times \frac{\text{Amount health related costs have increased since 1977}}{\text{Total health related costs in 1977}}$

%"

**Analysis:**

Statistically, there is no relationship between the increase in health related costs in the previous five years and the degree of interest demonstrated to an individual health program.

Therefore, statistically, the  $H_0$  must be accepted. There are, however, a number of practical relationships between the health related costs in the previous five years and the degree of interest in particular health programs. Over seventy percent of the respondents indicated their health related costs increased by more than forty five percent over the health related costs in 1977. Forty one percent (12 of 29) of these respondents indicated a high or very high degree of interest in executive physicals; and back-to-work evaluations. Forty five percent (14 of 31) of these respondents showed a high or very high interest in lifting techniques and back pain programs. Additionally, forty two percent (13 of 31) indicated a high or very high interest in the stress management program. These five programs are apparently interesting to a large group of firms based on their past cost increases. Additionally, the high cost firms were particularly interest in two other programs, CPR/choke training (56%, 17 of 30) and OSHA orientation program (55%, 17 of 31). It is also

highly possible that the firms may be interested in these two programs because of recent publicity of CPR training techniques and the added emphasis on OSHA requirements. The other health programs in the following chart failed to indicate even a practical relationship with past health related cost increases.

## CHI SQUARE

Hypothesis III. Analysis of Association Between a Firm's  
Percent Increase in Health Costs (78-82) and Interest in Health Programs

| Health Program      | Percent Increase in Costs |       |        |         | Total<br>High-<br>Very High | N  |
|---------------------|---------------------------|-------|--------|---------|-----------------------------|----|
|                     | $\chi^2$                  | P     | 0-45%  | 45%+    |                             |    |
| Executive Physicals | .98114                    | .3219 | 758.3% | 1241.4% | 1946.3%                     | 38 |
| Back-to-Work Exams  | .56315                    | .4530 | 753.8% | 1241.4% | 1945.2%                     | 38 |
| CPR/Choke Training  | .40292                    | .5256 | 646.2% | 1756.7% | 2353.5%                     | 46 |
| Lifting Techniques  | .00364                    | .9519 | 646.2% | 1445.2% | 2045.5%                     | 40 |
| OSHA Orientation    | .08142                    | .7754 | 650.0% | 1754.8% | 2353.5%                     | 46 |
| Back Pain Program   | .27691                    | .5987 | 753.8% | 1445.2% | 2147.7%                     | 42 |

Degrees of freedom = 1

\*The first number is the raw number of respondents. The percentage is the per-  
cent of the total number of high-very high respondents.

The following programs had insufficient interest to validate the expected value:

|                              |                                 |
|------------------------------|---------------------------------|
| Pre-employment Physicals     | Smoking Cessation               |
| Occupational Nursing Service | Exercise Program                |
| Immunization Services        | Health Assessment               |
| Pulmonary Screening          | Medical Director                |
| Annual Chest X-Ray Service   | Marriage Counseling             |
| Audiology Screening          | Alcohol-Drug Rehab.             |
| Cancer Screening             | Psychiatric Counseling          |
| Blood Pressure Screening     | Financial Management Counseling |
| Prevention Chemical Dep.     | Employee Health Records         |
| Stress Management Program    | Centralized Billing             |
| Weight Control Program       |                                 |
| Nutritional Program          |                                 |

**Hypothesis IV: OCCUPATIONAL CATEGORIES VERSUS INTEREST**

$H_0$ : No relationship exists between a high percentage involvement (50% or greater) in each occupational category and the level of interest in each health program.

$H_1$ : Firms indicating a 50% or greater employee involvement in each occupational category are more likely to show a higher interest in certain health programs than those firms with involvement at less than 50%.

To further divide this hypothesis, seven separate and distinct occupational categories are developed. Each has a specific null and alternate hypothesis as shown below:

$H_{OA}$ : There is no relationship between the amount of employee time devoted to the occupational category of processing/handling chemicals and the degree of interest for each health program.

$H_{1A}$ : Firm devoting over fifty percent of their employee time to processing/handling chemicals are more likely to be interested in each health program than firms having less than fifty percent of their employee time devoted to processing/handling chemicals.

$H_B$ : Deals with heavy manufacturing and has null and alternate hypothesis similar to  $H_A$  - Processing/Handling chemicals.

$H_C$ : Light manufacturing

$H_D$ : Warehousing/distribution - heavy

$H_E$ : Warehousing/distribution - light

$H_F$ : Office/sales

$H_G$ : "Other"

Key Observations:

- \* Only one responding firm indicated fifty percent or more of its employee time was spent in the processing or handling of chemicals.
- \* Chi squared analysis was not permitted for any cross tabulation analysis for processing/handling chemicals, manufacturing-heavy, warehousing/distribution-heavy; warehousing/distribution-light and the other occupational category. This is the result of a low number of firm's reporting a high degree of resources employed in these activities.
- \* Under the occupational category of light manufacturing, the health programs of executive physicals, back-to-work evaluations, CPR/choke training, lifting techniques, OSHA orientation; back pain program and stress management program have adequate data and distribution for chi squared analysis.
- \* Under the occupational category of office/sales, the health programs of executive physicals, pre-employment physicals, back to work evaluations, CPR/choke training, cancer screening, lifting techniques; OSHA orientation; back pain programs; blood pressure screening; stress management program; and the exercise program have adequate data and distribution for chi squared analysis.
- \* The "other" occupational category included nine different job categories. The job descriptions and corresponding number of responses are listed below:

|                        |   |
|------------------------|---|
| -Machine Maintenance   | 3 |
| -Traveling Salesmen    | 3 |
| -Truck Drivers         | 3 |
| -Construction Services | 2 |
| -Linen Rental          | 1 |
| -Sign Erectors         | 1 |
| -Clerical Services     | 1 |
| -Service Organization  | 1 |
| -Film Stripping        | 1 |

## Questions Asked:

The data used in testing the above hypothesis required the cross tabulation of the responses to two questions. One part required the respondent to indicate the company's degree of

interest in each of twenty-eight health and assistance programs.

The degree of interest was given as very high, high, moderate and low.

Additionally, a separate question was asked to obtain data concerning the amount of employee time devoted to one of seven occupational categories. The question read:

"Approximately what percent of your employees are directly involved in:

- % Processing/handling chemicals
- % Heavy Manufacturing
- % Light Manufacturing
- % Warehousing/Distribution-heavy
- % Warehousing/Distribution-light
- % Office/Sales
- % Other (Specify)"

Analysis:

The cross tabulation between the occupational category of processing/handling chemicals and the degree of interest in each health or assistance program demonstrate no practical relationship. The single firm indicating a majority of time involved with processing/handling chemicals showed a high degree of interest in eight of the programs.

There is no statistical relationship between the occupational category of heavy manufacturing and the degree of interest associated with any individual health or assistance program. The small number of firms (four) with a majority of employee time devoted to their occupational category also makes a practical relationship difficult to pinpoint. For this reason, it is determined that no practical relationship exists with this particular cross tabulation.

There is no statistical relationship between the occupational category of light manufacturing and any individual health or assistance program. There appears to be a practical relationship between the light manufacturing occupational category and the health programs of executive physicals, lifting techniques and back-to-work evaluations. In each instance sixty seven percent (8 of 12) of the firms indicating a majority of their employee time is devoted to light manufacturing also indicate a high or very high interest in these programs. Additionally if the statistical confidence levels were reduced from 90% to 88%, both the back to work evaluations and the lifting technique would fall within the rejection of the null hypothesis area.

There is no statistical relationship between the occupational category of heavy warehousing/distribution and any individual health or assistance programs. There are only six firms with a majority of their employee time devoted to this occupational category. For this reason it is inadvisable to attempt to pinpoint a practical relationship. The small size of the sample in this particular occupational category can result in erroneous conclusions if the percentages are solely considered at face value.

There is no statistical relationship between the occupational category of light warehousing/distribution and any individual health or assistance program. There are only five firms indicating a majority of their employee time devoted to this occupational category. For this reason it is inadvisable to attempt to pinpoint a practical relationship.

There is a statistical relationship between the occupational category of office/sales and the health program of back-to-work evaluations with a confidence level in excess of 90% (93.55%). This is the only health program in which a statistical significance is present. There is a practical relationship between the occupational category of office/sales and the health and assistance programs of executive physicals, CPR/choke training, and exercise programs.

There is no statistical or practical relationship between the "other" occupational category and any of the health and assistance programs. The wide diversification of tasks in the "other" category is possibly a significant contributing factor to the absence of any relationship.

## CHI SQUARE

## HYPOTHESIS IV: Analysis of Association Between a Given Occupational Category and Interest in Health Programs.

The expected value could not be validated for any program in five of the seven occupational areas because of a low level of interest coupled with a low number of responses in the category. These five occupational areas are processing/handling chemicals, heavy manufacturing, warehousing/distribution-heavy, warehousing/distribution-light, and other.

## LIGHT MANUFACTURING

| Health Programs          | <u><math>\chi^2</math></u> | <u>P</u> | Total Interest<br>High-<br>Very High | <u>N</u> |
|--------------------------|----------------------------|----------|--------------------------------------|----------|
| Executive Physicals      | 2.64127                    | .1041    | 866.7%*                              | 52       |
| Back-to-work Evaluations | 3.65698                    | .0558**  | 866.7%                               | 54       |
| CPR/Choke Training       | 0.02119                    | .8843    | 650.0%                               | 54       |
| Lifting Technique        | 3.89514                    | .0484**  | 866.7%                               | 55       |
| OSHA Orientation         | 0.65045                    | .4200    | 763.6%                               | 53       |
| Back Pain Program        | 1.34798                    | .2456    | 758.3%                               | 55       |
| Stress Management        | 0.34622                    | .5563    | 650.0%                               | 54       |

Degree of freedom = 1

\*The first number is the raw number of respondents. The second number is the percent of the total number of high-very high respondents.

\*\*The alternate hypothesis is accepted.

The following programs had insufficient interest to validate the expected value: pre-employment physicals, occupational nursing services, immunization services, pulmonary screening, annual chest X-Ray, audiology screening, cancer screening, blood pressure screening, preventative chemical dependence, weight control, nutrition, smoking cessation, exercise, health assessment, medical director (on site) marriage counseling, alcohol/drug rehabilitation, psychiatric counseling, finance management counseling, employee health records, and centralized billing.

## OFFICE/SALES

| <u>Health Programs</u>       | <u>X<sup>2</sup></u> | <u>P</u> | Total     | <u>N</u> |
|------------------------------|----------------------|----------|-----------|----------|
|                              |                      |          | Interest  |          |
|                              |                      |          | High-     |          |
|                              |                      |          | Very High |          |
| Executive Physicals          | 0.97915              | .3224    | 1055.6%*  | 52       |
| Pre-employment Physicals     | 0.94408              | .3312    | 422.2%    | 52       |
| Back-to-work Evaluations     | 4.58205              | .0323**  | 422.2%    | 54       |
| CPR/Choke Training           | 0.59341              | .4411    | 1055.6%   | 54       |
| Cancer Screening             | 0.71053              | .3993    | 422.2%    | 54       |
| Lifting Technique            | 2.16790              | .1409    | 527.8%    | 55       |
| OSHA Orientation             | 0.76916              | .3805    | 844.4%    | 55       |
| Back Pain Program            | 1.15482              | .2825    | 633.3%    | 55       |
| Blood Pressure/Off. Sales    | 0.00000              | 1.0000   | 633.3%    | 54       |
| Stress Management/Off. Sales | 0.20241              | .6528    | 847.1%    | 54       |
| Exercise Prog./Off. Sales    | 2.79103              | .0948    | 847.1%    | 54       |

Degree of freedom = 1

\*The first number is the raw number of respondents. The percentage is the percent of the total number of high-very high respondents.

\*\*The alternate hypothesis is accepted.

The following programs had insufficient interest to validate the expected value: occupational nursing services, immunization, pulmonary screening, annual chest X-Ray, audiology screening, blood pressure screening, preventative chemical dependence, stress management, weight control, nutrition, smoking cessation, exercise, health assessment, medical director (on site), marriage counseling, alcohol/drug rehabilitation, psychiatric counseling, finance management counseling, employee health records, and centralized billing.

Number of/Percentage of High-Very High  
Interest With 50% or more of Employee  
Time Involved in

|   |   |   |   |   |   |   |  |
|---|---|---|---|---|---|---|--|
| C | H |   |   |   |   |   |  |
| E |   | H |   | L |   |   |  |
| M |   | E | I |   |   |   |  |
| I |   | A | G |   |   |   |  |
| C |   | V | H |   | O |   |  |
| A |   | Y | T |   | F |   |  |
| L |   |   |   |   | F |   |  |
|   | H | L | W | W | I |   |  |
| H | E | I | A | A | C |   |  |
| A | A | G | R | R | E | " |  |
| N | V | H | E | E |   | O |  |
| D | Y | T | H | H | S | T |  |
| L |   |   | O | O | A | H |  |
| I | M | M | U | U | L | E |  |
| N | F | F | S | S | E | R |  |
| G | G | G | E | E | S | " |  |

Health Program

|                               |       |      |      |      |      |       |      |
|-------------------------------|-------|------|------|------|------|-------|------|
| Executive Physicals           | 0/0   | 1/25 | 8/67 | 3/50 | 3/75 | 10/56 | 1/10 |
| Pre-employment Physicals      | 0/0   | 1/25 | 5/42 | 2/33 | 2/50 | 4/22  | 1/11 |
| Back-to-work Evaluations      | 1/100 | 3/75 | 8/67 | 3/50 | 2/50 | 4/22  | 2/20 |
| Occupational Nurse            | 0/0   | 0/0  | 1/8  | 1/17 | 0/0  | 1/6   | 1/10 |
| Immunization Service          | 0/0   | 0/0  | 4/36 | 1/17 | 0/0  | 2/11  | 1/10 |
| Pulmonary Screening           | 1/100 | 2/50 | 2/17 | 1/17 | 0/0  | 4/22  | 1/10 |
| Annual Chest X-Ray            | 0/0   | 1/25 | 2/17 | 1/17 | 1/20 | 3/17  | 1/10 |
| Audiology Screening           | 1/100 | 2/50 | 3/25 | 0/0  | 2/40 | 3/17  | 0/0  |
| CPR/Choke Training            | 1/100 | 3/75 | 6/50 | 3/50 | 2/50 | 10/57 | 2/20 |
| Cancer Screening              | 0/0   | 1/25 | 4/36 | 2/33 | 2/40 | 4/22  | 2/20 |
| Lifting Technique             | 1/100 | 3/75 | 8/67 | 4/67 | 2/40 | 5/28  | 1/10 |
| OSHA Orientation              | 1/100 | 3/75 | 7/64 | 4/67 | 2/40 | 8/44  | 3/30 |
| Back Pain Program             | 1/100 | 2/75 | 7/58 | 4/67 | 3/60 | 6/33  | 1/10 |
| Blood Pressure                | 0/0   | 1/25 | 4/36 | 2/33 | 2/40 | 6/33  | 2/20 |
| Preventative Chemical Depen.  | 0/0   | 0/0  | 5/42 | 2/33 | 1/20 | 3/18  | 2/20 |
| Stress Management             | 0/0   | 0/0  | 6/50 | 2/33 | 3/60 | 8/47  | 3/30 |
| Weight Control                | 0/0   | 0/0  | 3/25 | 3/50 | 3/60 | 3/17  | 3/30 |
| Nutritional Program           | 0/0   | 0/0  | 2/17 | 1/17 | 2/40 | 2/12  | 2/20 |
| Smoking Cessation             | 0/0   | 0/0  | 2/17 | 1/17 | 1/20 | 4/24  | 1/10 |
| Exercise Program              | 0/0   | 0/0  | 3/25 | 1/17 | 3/60 | 8/47  | 2/20 |
| Health Assessment             | 0/0   | 0/0  | 3/25 | 0/0  | 2/40 | 5/29  | 2/20 |
| On Site Medical Director      | 0/0   | 0/0  | 0/0  | 2/33 | 0/0  | 1/6   | 1/10 |
| Marriage Counseling           | 0/0   | 0/0  | 0/0  | 0/0  | 0/0  | 3/18  | 1/10 |
| Alcohol/Drug Rehabilitation   | 0/0   | 0/0  | 2/17 | 1/17 | 0/0  | 3/19  | 1/10 |
| Psychological Counseling      | 0/0   | 0/0  | 2/17 | 1/17 | 0/0  | 3/18  | 1/10 |
| Finance Management Counseling | 0/0   | 0/0  | 1/8  | 1/17 | 1/20 | 5/29  | 1/10 |
| Employee Health Records       | 0/0   | 1/25 | 1/8  | 0/0  | 1/20 | 4/24  | 0/0  |
| Central Billing               | 1/100 | 1/25 | 2/17 | 1/17 | 1/20 | 1/6   | 0/0  |

## HYPOTHESIS V: MALE/FEMALE VERSUS INTEREST

H<sub>0</sub>: There is no relationship between the sex composition of the firm and the level of interest in each health program.

H<sub>1</sub>: Higher percentage of males than females will result in a higher degree of interest for each program.

Key Observations:

More health programs are offered at firms with a higher number of males to females.

Generally speaking, there is no relationship between the ratio of males to females and the high to very high degree of interest in health programs.

- \* 22% (12 of 53) of those surveyed indicated zero to moderate interest or did not answer the question.
- \* 24% of the respondents have high to very high interest in 1-4 health programs, 26% have high to very high interest in 5-9 health programs. 26% of the respondents have high to very high interest in 10 or more health programs.
- \* An exception to this generality is the statistical relationship between the male to female and interest in weight control programs. The firms that are interested in weight control programs have more females than males. However, 78.4% of the respondents have zero or moderate interest, or did not respond to the question.
- \* Practical observation relates the male to female ratio to interest in exercise programs. Of the 69% who have interest in exercise programs 52% have more females than males.

Question Appearing of the Questionnaire:

"Company size; how many males: females." (This question is cross tabulated with question 13. Question 13 solicits health programs offered and the degree of interest in each program.)

## ANALYSIS:

Interest in health programs has no relationship to the male to female ratio that favors a male or female mix. The exceptions to this statement is interest in weight control and exercise programs. More health programs are offered by firms whose employee mix favors males.

## CHI SQUARE

## HYPOTHESIS V: Analysis of Association Between Male and Female Composition of Employees and Interest in Each Health Program.

| <u>Health Program</u> | <u>P</u> | <u>Hypothesis Accepted</u> | <u>Ratio</u>        |                   |                          | <u>N</u> |
|-----------------------|----------|----------------------------|---------------------|-------------------|--------------------------|----------|
|                       |          |                            | <u>More Females</u> | <u>More Males</u> | <u>Offer No Programs</u> |          |
| Number of Programs    | P<.05    | H <sub>1</sub>             | 1047.6%             | 618.8%            | 1630.2%                  | 53       |

| <u>Number of Programs</u> | <u>P&lt;.05</u> | <u>H<sub>1</sub></u> | <u>Offer 1-4 Programs</u> |                |                | <u>N</u> |
|---------------------------|-----------------|----------------------|---------------------------|----------------|----------------|----------|
|                           |                 |                      | <u>733.3%</u>             | <u>2165.6%</u> | <u>2852.8%</u> |          |
| Number of Programs        | P<.05           | H <sub>1</sub>       | 733.3%                    | 2165.6%        | 2852.8%        | 53       |

| <u>Number of Programs</u> | <u>P&lt;.05</u> | <u>H<sub>1</sub></u> | <u>Offer 5+ Programs</u> |               |               | <u>N</u> |
|---------------------------|-----------------|----------------------|--------------------------|---------------|---------------|----------|
|                           |                 |                      | <u>1419.0%</u>           | <u>515.6%</u> | <u>917.0%</u> |          |
| Number of Programs        | P<.05           | H <sub>1</sub>       | 1419.0%                  | 515.6%        | 917.0%        | 53       |

| <u>Health Program</u>     | <u>P</u> | <u>Hypothesis Accepted</u> | <u>Total Interest, Zero Low, Moderate</u> |           | <u>N</u> |
|---------------------------|----------|----------------------------|-------------------------------------------|-----------|----------|
|                           |          |                            | <u>4178.8%</u>                            | <u>52</u> |          |
| Pulmonary Screening       | P>.05    | H <sub>0</sub>             | 4178.8%                                   | 52        |          |
| Audiology Screening       | P>.05    | H <sub>0</sub>             | 4180.4%                                   | 51        |          |
| CPR/Choke Training        | P>.05    | H <sub>0</sub>             | 2447.1%                                   | 51        |          |
| Cancer Screening          | P>.05    | H <sub>0</sub>             | 3772.5%                                   | 51        |          |
| Back Pain Program         | P>.05    | H <sub>0</sub>             | 3159.6%                                   | 52        |          |
| Blood Pressure Screening  | P>.05    | H <sub>0</sub>             | 3568.6%                                   | 51        |          |
| Preventative Alcohol/Drug | P>.05    | H <sub>0</sub>             | 3874.5%                                   | 51        |          |
| Stress Management         | P>.05    | H <sub>0</sub>             | 3058.8%                                   | 51        |          |
| Weight Control            | P<.05    | H <sub>1</sub>             | 4078.4%                                   | 51        |          |
| Smoking Cessation         | P>.05    | H <sub>0</sub>             | 4384.3%                                   | 51        |          |
| Health Assessment         | P>.05    | H <sub>0</sub>             | 4282.4%                                   | 51        |          |

The following programs had validated expected value and the null hypothesis was accepted: executive physicals, pre-employment physicals, back-to-work examinations, proper lifting technique, OSHA orientation.

The following programs had insufficient interest to validate the expected value: occupational nursing services, immunization services, annual chest X-ray, medical director (on site), nutrition, marriage counseling, alcohol/drug rehabilitation, psychiatric counseling, financial counseling, employee health record, and centralized billing.

## HYPOTHESIS VI: FIRM'S TIME IN AREA VERSUS INTEREST

$H_0$ : No relationship exists between the length of time the firm has done business in the area and the degree of interest for each program.

$H_1$ : Firms indicating a longer length of time in the business community will have a higher level of interest in each health program.

Key Observations:

There is a statistical relationship between the length of time in business in the area and the number of health programs offered.

- \* None of the surveyed firms who have been in business in the area from 1-5 years offer 5 or more health programs. One-half of the firms in this category, i.e., in business from 1-5 years offer 1-4 health programs while the other half offers no health programs.
- \* Approximately one-fourth of the firms who have been in business in the area for 6 or more years offer five or more health programs. One-half of the firms of this category offer from 1-4 health programs. The remaining one-fourth offer no health programs.

There is no relationship between the number of years in business in the area and the level of interest in health programs.

- \* Responses of high or very high interest were equally distributed between interest in zero, 1-4, 5-9 and 10+ health programs.
- \* There are several exceptions to this general statement. A statistically significant relationship exists between the number of years in business and interest in cardiopulmonary resuscitation training. A 50/50 split between those with none, zero or moderate interest and those with high or very high interest.

Questions Appearing on the Questionnaire:

"This is a two-part question. Listed below are various employee assistance and administrative programs currently utilized by major employers across the country, in the first column, identify the programs which are currently provided to your employees. In the second column, indicate your degree of interest if these services were available on a full or part-time basis."

Number of years the company has been in business in this area health programs include;

executive physicals, pre-employment physicals, back-to-work evaluations, occupational nursing services, immunization services, pulmonary screening, annual chest x-ray, audiology screening, cardiopulmonary resuscitation training, cancer screening, proper lifting technique classes, OSHA orientation programs, back pain programs, blood pressure screening, preventative alcohol and chemical dependence program, stress management program, weight control program, nutritional program, smoking cessation program, exercise program, health assessment and evaluation services, and on-site medical director.

Analysis:

The null hypothesis was accepted for most health programs. The exceptions establish a positive relationship between the number of years in business in the area and high to very high interest in CPR training and blood pressure screening.

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HYPOTHESIS VI: Analysis of Association Between Length of Time  
a Firm Has Been In The Area and Interest in Each Health Program.

| <u>Health Program</u>       | <u>P</u> | <u>Hypothesis Accepted</u> | <u>Offer 5+ Programs</u>                  |              |                            | <u>N</u> |
|-----------------------------|----------|----------------------------|-------------------------------------------|--------------|----------------------------|----------|
|                             |          |                            | <u>1-5</u>                                | <u>6+</u>    | <u>11</u>                  |          |
| Number of Programs          | P<.05    | H <sub>1</sub>             | 00%*                                      | 1124.4%      | 1119.3%                    | 57       |
|                             |          |                            |                                           |              | <u>Offer 1-4 Programs</u>  |          |
| Number of Programs          | P<.05    | H <sub>1</sub>             | 650.0%                                    | 2248.9%      | 2849.1%                    | 57       |
|                             |          |                            |                                           |              | <u>Offer Zero Programs</u> |          |
| Number of Programs          | P<.05    | H <sub>1</sub>             | 650.0%                                    | 1226.7%      | 1831.6%                    | 57       |
|                             |          |                            |                                           |              | <u>Total Interest</u>      |          |
|                             |          |                            |                                           |              | <u>High-Very High</u>      |          |
| CPR/Choke Training          | P<.05    | H <sub>1</sub>             | 218.2%                                    | 2556.8%      | 2749.1%                    | 55       |
| Blood Pressure Screening    | P<.05    | H <sub>1</sub>             | 19.1%                                     | 1840.9%      | 1934.5%                    | 55       |
| <u>Health Program</u>       | <u>P</u> | <u>Hypothesis Accepted</u> | <u>Total Interest, Zero Low, Moderate</u> |              |                            | <u>N</u> |
|                             |          |                            | <u>47</u>                                 | <u>85.5%</u> |                            |          |
| Nutrition                   | P>.05    | H <sub>0</sub>             | 38                                        | 69.1%        |                            | 55       |
| Exercise                    | P>.05    | H <sub>0</sub>             | 45                                        | 81.8%        |                            | 55       |
| Smoking Cessation           | P>.05    | H <sub>0</sub>             | 45                                        | 81.8%        |                            | 54       |
| Health Assessment           | P>.05    | H <sub>0</sub>             | 46                                        | 85.2%        |                            | 54       |
| Alcohol/Drug Rehabilitation | P>.05    | H <sub>0</sub>             | 47                                        | 85.5%        |                            | 54       |
| Financial Counseling        | P>.05    | H <sub>0</sub>             | 47                                        | 87.0%        |                            | 54       |
| Employee Health Records     | P>.05    | H <sub>0</sub>             | 47                                        | 87.0%        |                            | 54       |
| Centralized Billing         | P>.05    | H <sub>0</sub>             |                                           |              |                            |          |

\*The first number is the raw number of respondents. The second number is the percent of the respondents with zero, low or moderate interest.

The following programs had insufficient interest to validate the expected value: occupational nursing services, medical director (on site), marriage counseling, psychiatric counseling.

The following programs had valid expected value and the null hypothesis was accepted: executive physicals, pre-employment physicals, back-to-work evaluations, immunization services, pulmonary screening, annual chest x-ray services, audiology screening, OSHA orientation program, back pain program, preventative alcohol/chemical dependance, stress management, weight control.

The following programs showed a practical relationship between length of time a firm has been in the area and interest in the health program. The  $P < .05$  and the expected value were validated. Programs were cancer screening, and proper lifting technique classes.

## HYPOTHESIS VII: WRITTEN HEALTH POLICY VERSUS INTEREST

$H_0$ : No relationship exists between a firm having a written health policy for employees and the level of interest in each health program.

$H_1$ : Firms with a written health policy will show a higher level of interest in specific health programs than those firms that do not have such a policy.

Key Observations:

- \* There is no statistical relationship between the fact that a firm has a written policy on employee health and welfare benefits and a high or very high degree of interest in any individual health or assistance benefit.
- \* A practical relationship between a firm having a written policy and a high or very high degree of interest was noted with the CPR and Choke training and the OSHA orientation programs. Fifty six percent (26 of 55) of the firms with a written policy indicated a high or very high degree of interest in CPR and Choke training. Additionally, ninety percent (26 of 29) of those indicating a high or very high degree of interest also had a formal written policy. Fifty three percent (24 of 45) of the firms with a written policy indicate a high or very high degree of interest in the OSHA Orientation Program, and eighty six percent (24 of 28) of the firms showing a high or very high degree of interest possessed a formal written policy.

Question Asked:

The data used in testing the above hypothesis required the cross tabulation of the responses to two questions. One part required the respondent to indicate the company's degree of interest in each of twenty-six health and assistance programs. The degree of interest was given as very high, high, moderate and low.

Additionally, a separate question was asked to obtain data concerning the availability of a written policy pertaining to the health and welfare of employees. The question read:

"Does the firm have a written policy regarding health and welfare of employees? YES        NO       "

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HYPOTHESIS VII: Analysis of Association Between Firms with a Written Health and Welfare Policy with Interest in Health Programs.

| Health Program     | Written Policy Total |       |         |        |         | N  |
|--------------------|----------------------|-------|---------|--------|---------|----|
|                    | X                    | P     | Yes*    | No*    | Hi-VHi* |    |
| CPR/Choke Training | 2.53279              | .1115 | 2657.8% | 330.0% | 2952.7% | 55 |

Degrees of freedom = 1

\*The first number is the raw number of respondents. The second number (percentage) is the percent of the total number of respondents answering the question in the indicated manner.

All programs except CPR/Choke Training had insufficient interest to validate the expected values.

Hypothesis VIII: NUMBER OF HEALTH PROGRAMS VERSUS  
Interest

$H_0$ : A Firm's level of interest in each program will not be directly correlated to the number of health programs being offered.

$H_1$ : There exists a direct relationship between high level of interest in a program and the number of programs currently offered. Low level of interest will correspond with a firm offering few programs.

**Key Observations:**

There is a statistically significant relationship between the number of employee health programs offered and interest in health programs.

.Several exceptions to this generality are the interest in cancer screening, blood pressure screening and interest in stress management.

.High or very high interest was expressed by 40% or more of the respondents in the following areas: executive physicals; back-to-work evaluations; CPR-choke training; proper lifting technique; back pain programs and stress management programs.

Question as it appears on the questionnaire: "Listed below are various employee assistance and administrative programs currently utilized by major employers across the country. In the first column, identify the programs which are currently provided to your employees. In the second column, indicate your degree of interest if these services were available on a full or part-time basis."

**Analysis:**

Those firms offering health programs are probably receptive to additional programs.

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## Hypothesis VIII Analysis of Association Between Firm's Not Offering a Health Program and Interest in Health Programs.

| Health Program                   | P     | Hypothesis Accepted | Offer No | Offer 1-4 |          | Offer 5+ | Total Interest |         | N  |
|----------------------------------|-------|---------------------|----------|-----------|----------|----------|----------------|---------|----|
|                                  |       |                     |          | Programs  | Programs |          | Very High      | High-   |    |
| Executive Physicals              | P<.05 | H <sub>1</sub>      | 529.43*  | 1248.03*  | 969.23*  | 646.23*  | 55             | 646.23* | 55 |
| Pre-employment Phys.             | P<.05 | H <sub>1</sub>      | 15.9%    | 1041.7%   | 646.2%   | 1731.5%  | 54             | 1731.5% | 54 |
| Back-to-Work Evaluations         | P<.05 | H <sub>1</sub>      | 211.8%   | 1453.8%   | 861.5%   | 2442.9%  | 56             | 2442.9% | 56 |
| CPR/Choke Training               | P<.05 | H <sub>1</sub>      | 317.6%   | 1763.0%   | 969.2%   | 2950.9%  | 57             | 2950.9% | 57 |
| Proper Lifting Tech.             | P<.05 | H <sub>1</sub>      | 15.9%    | 1553.6%   | 969.2%   | 2543.1%  | 58             | 2543.1% | 58 |
| O.S.H.A. Orientation             | P<.05 | H <sub>1</sub>      | 211.8%   | 1661.6%   | 184.6%   | 2951.8%  | 56             | 2951.8% | 56 |
| Back Pain Program                | P<.05 | H <sub>1</sub>      | 211.8%   | 1346.4%   | 076.9%   | 2543.1%  | 58             | 2543.1% | 58 |
| Preventative Chemical Dependence | P<.05 | H <sub>1</sub>      | 423.5%   | 517.9%    | 866.7%   | 1729.8%  | 57             | 1729.8% | 57 |

\*The first number is the raw number of respondents. The second number is the percent of firms in the group.

The following programs had insufficient interest to validate the expected value: occupational nursing services, immunization services, pulmonary screening, annual chest x-ray, audiology screening, weight control, nutrition, smoking cessation, health assessment, medical director, marriage counseling, alcohol/drug rehabilitation, psychiatric counseling, financial counseling, employee health records, and centralized billings.

The following programs had valid expected values and the null hypothesis was accepted: cancer screening, blood pressure screening, stress management, and exercises.

#### Hypothesis IX HEALTH BENEFITS VERSUS INTEREST

H<sub>0</sub>: No relationship exists between high expenditure for health benefits and level of interest for each program.

H<sub>1</sub>: Firms experiencing a high percentage of payroll for health benefits will demonstrate a high level of interest for each health program.

#### Key Observations:

\*There is a statistical relationship between firms devoting more than six percent of their payroll costs to health benefits and these firms indicating a high or very high interest in the back pain program. Sixty three percent (12 of 19) of the firms with six percent or more of their payroll expenses devoted to health benefits indicate a high or very high interest in this program. Additionally, eighty six percent (12 of 14) of all high or very high responses were from firms with the higher percentage (6 + %) of payroll costs devoted to health benefits. The alternate hypothesis (H<sub>1</sub>) is accepted for back pain program.

\*Several practical relationships were also noted between firms with greater than six percent of their payroll costs devoted to health benefits and high or very high interest in individual health programs. These programs are executive physicals, pre employment physicals, back to work evaluations, lifting technique classes and OSHA orientation programs. Although the alternate hypothesis cannot be accepted for these programs, a practical relationship is present for further exploration. A specific data chart for these programs is in Appendix A.

\*The remaining programs have no statistical or practical relationship with the percentage of payroll expenses devoted to health benefits.

Question Asked:

The data used in testing the above hypothesis required the cross tabulation of the responses to two questions. One part required the respondent to indicate the company's degree of interest in each of the twenty-eight health and assistance programs. The degree of interest was given as very high, high, moderate and low.

Additionally a separate question was asked to obtain data concerning the percentage of payroll expenses devoted to health benefits. The question read:

"Approximately what percentage of your total payroll is for health benefits? (Payroll includes: salaries, fringe benefits and worker's compensation.) \_\_\_\_\_ %"

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Hypothesis IX Analysis of Association Between Firms with a High Percentage of Total Payroll for Health Benefits with Interest in Health Programs.

| Health Program    | X <sup>2</sup> | P       | Benefits Percent |        | Total<br>High-Very<br>High | N  |
|-------------------|----------------|---------|------------------|--------|----------------------------|----|
|                   |                |         | 0.5%             | 6+%    |                            |    |
| CPR - Choke Trng  | .14354         | .7048   | 654.5*           | 954.5* | 1550.0                     | 30 |
| OSHA Orientation  | 2.4889         | .1147   | 330.0            | 1161.1 | 1450.0                     | 28 |
| Back Pain Program | 5.66217        | .0173** | 218.2            | 1263.2 | 1446.7                     | 30 |

degrees of freedom = 1

\*The first number is the raw number of respondents. The percentage is the percent of the total number of high-very high respondents.

\*\*The alternate hypothesis is accepted.

All programs except CPR/Choke Training, OSHA Orientation, and back pain program had insufficient interest to validate the expected value.

Hypothesis X: OWNERSHIP VERSUS INTEREST

$H_0$ : No relationship between the ownership of a firm (subsidiary or independent) and interest in each health program.

$H_1$ : Firms in a subsidiary organizational role are more likely to be interested in health programs

Key Observations

\*In two areas - pre-employment physicals and lifting, there is a statistical relationship between being a subsidiary and interest.

\*There is a practical relationship between being a subsidiary and interest in executive exams.

\*There is a practical relationship between increased interest in a number of health programs and being a subsidiary.

\*There is a statistical relationship between offering more health programs and being a subsidiary.

Analysis: In many areas there is no distinction between the interest of the subsidiary and the independent. Where there is a distinction, the survey always showed the subsidiary having more interest. The three areas of increased subsidiary interest are pre-employment physicals, lifting, and executive exams.

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## Hypothesis X Analysis of Association Between Ownership of a Firm (Subsidiary or Independent) and Interest in Health Programs.

| Number of programs offered | Subsidiary | Independent | Total | N  |
|----------------------------|------------|-------------|-------|----|
| 5+                         | 862%       | 539%        | 1522% | 59 |
| 1-4                        | 1554%      | 1346%       | 2848% | 59 |

| Interest in health programs |       |      |       |    |
|-----------------------------|-------|------|-------|----|
| 5-9                         | 1063% | 638% | 1627% | 59 |
| 10+                         | 847%  | 953% | 1729% | 59 |

| <u>Health Programs</u>                           | <u>X<sup>2</sup></u> | <u>P</u> | <u>Subsidiary</u> | <u>Independent</u> | <u>High</u> | <u>Very High</u> | <u>N</u> |
|--------------------------------------------------|----------------------|----------|-------------------|--------------------|-------------|------------------|----------|
| Executive Physicals                              | 2.11599              | .1458    | 1557.7%           | 1142.3%*           | 2647.3%*    | 55               |          |
| Pre-employment Phy.                              | 3.01443              | **.0825  | 1164.7%           | 635.3%             | 1731.5%     | 54               |          |
| Back-to-work Evalua.                             | .18215               | .6695    | 1250.0%           | 1250.0%            | 2442.9%     | 56               |          |
| Pulmonary Screening                              | .24967               | .6173    | 433.3%            | 866.7%             | 1221.1%     | 57               |          |
| Annual Chest X-ray                               | 0                    | 1.0000   | 444.4%            | 555.6%             | 915.5%      | 58               |          |
| Audiology Screening                              | .10570               | .7451    | 654.5%            | 545.5%             | 1119.3%     | 57               |          |
| CPR/Choke Training                               | .17376               | .6768    | 1448.3%           | 1551.7%            | 2950.9%     | 57               |          |
| Cancer Screening                                 | .00065               | .9796    | 847.1%            | 952.9%             | 1729.8%     | 57               |          |
| Proper Lifting Tech.                             | 3.08260              | **.0791  | 1560.0%           | 1040.0%            | 2543.1%     | 58               |          |
| OSHA Orientation                                 | .69849               | .4033    | 1551.7%           | 1448.3%            | 2951.8%     | 56               |          |
| Back Pain Program                                | .02442               | .8758    | 1248.0%           | 1352.0%            | 2543.1%     | 58               |          |
| Blood Pressure Screen.                           | .00891               | .9248    | 947.4%            | 1052.6%            | 1933.3%     | 57               |          |
| Preventative Alcohol/Chemical Dependence Program | 0                    | 1.0000   | 847.1%            | 952.9%             | 1729.8%     | 57               |          |
| Stress Management                                | .8850                | .7660    | 1250.0%           | 1250.0%            | 2442.1%     | 57               |          |
| Weight Control                                   | .07421               | .7853    | 538.5%            | 861.5%             | 1322.8%     | 57               |          |
| Exercise                                         | .18785               | .6647    | 952.9%            | 847.1%             | 1729.8%     | 57               |          |

degrees of freedom = 1

\* The first number is the raw number of respondents. The second number (percentage) is the percent of the total number of high-very high respondents.

\*\*The alternate hypothesis is accepted.

The following programs had insufficient interest to validate the expected value: occupational nursing services, immunization services, nutritional program, smoking cessation program, health assessment and evaluation service, medical director (on site), marriage counseling, alcohol/drug rehabilitation, psychiatric counseling, finance management counseling, employee health records, and centralized billing of services.

Hypothesis XI: OFFERING A PROGRAM VERSUS INTEREST

$H_0$ : No relationship exists between a firm offering a health service and their interest in the program.

$H_1$ : Firms offering a health service are more likely interested in the offered service than a firm not offering the service.

Key Observations:

- \* There is a strong statistical relationship between the firms offering a health service and their interest in that service.
- \* In four areas  $p < .1$  thus there is a strong statistical between offering a program and interest in it. The four areas are pre-employment physicals, back-to-work physicals, lifting techniques, and OSHA regulations.
- \* With executive physicals  $p < .05$ , showing a statistical relationship between interest and offering the program.
- \* Even though there was not enough interest to validate the expected value, there is a practical relationship between offering three programs and interest in them. The three are cardiopulmonary resuscitation and choke training, back pain, and blood pressure. There is some unmet demand among Fulton Industrial firms for several programs.
- \* The unmet demand in descending order of interest is:

| Program:                                                                | Number Firms without program indicating strong interest |
|-------------------------------------------------------------------------|---------------------------------------------------------|
| CPR/Choke Training                                                      | 24                                                      |
| Stress Management                                                       | 23                                                      |
| Back Pain                                                               | 22                                                      |
| Exercise                                                                | 17                                                      |
| Cancer Screening                                                        | 16                                                      |
| Blood Pressure                                                          | 15                                                      |
| Executive Physicals                                                     | 14                                                      |
| OSHA Orientation                                                        | 14                                                      |
| Preventative Chemical Dependence                                        | 14                                                      |
| Lifting Techniques                                                      | 13                                                      |
| Weight Control                                                          | 12                                                      |
| Health Assessment                                                       | 10                                                      |
| Smoking Cessation                                                       | 10                                                      |
| Pulmonary Screening                                                     | 9                                                       |
| Audiology Screening                                                     | 8                                                       |
| Annual Chest X-ray                                                      | 7                                                       |
| Finance Management                                                      | 7                                                       |
| Employee Health Records                                                 | 6                                                       |
| Centralized Billing                                                     | 5                                                       |
| Psychological Counseling, Alcohol/<br>Drug Rehabilitation, Immunization | 4                                                       |
| Pre-Employment Physical and<br>Marriage Counseling                      | 3                                                       |
| Medical Director, Nursing and<br>Back to-Work                           | 2                                                       |

Question appearing on the questionnaire (the 26 health programs were listed individually) "Does your company now offer programs? Your degree of interest."

### Analysis:

As might be expected firms offering a specific health program were interested in that program. Among firms with strong interest it is helpful to see which ones are not offering the program. This sample shows "unmet demand" is strongest for CPR/Choke, Stress, Back Pain, Exercise, Cancer Screening, and Blood Pressure.

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Hypothesis XI Analysis of Association Between Firm's  
Offering a Program and Interest in the Health Program.

| Health Program     | Specific Program Offered   |         |         | Total   |                | N  |
|--------------------|----------------------------|---------|---------|---------|----------------|----|
|                    | <u><math>\chi^2</math></u> | P       | Yes     | No      | High-Very High |    |
| Executive Physical | 4.09778                    | .0429** | 1246.2% | 1436.8% | 2647.3%        | 55 |
| Pre-Employment     |                            |         |         |         |                |    |
| Physicals          | 19.10440                   | .0000** | 1482.4% | 317.6%  | 1731.5%        | 54 |
| Back-to-Work       |                            |         |         |         |                |    |
| Evaluations        | 37.44423                   | .0000** | 2291.7% | 28.3%   | 2442.9%        | 56 |
| Proper Lifting     |                            |         |         |         |                |    |
| Techniques         | 14.05628                   | .0002** | 1248.0% | 1352.0% | 2543.1%        | 58 |
| OSHA Orienta-      |                            |         |         |         |                |    |
| tion               | 16.52852                   | .0001** | 1551.7% | 1448.3% | 2951.8%        | 56 |

degrees of freedom = 1

\*The first number is the raw number of respondents. The second number (percentage) is the percent of the total number of high-very high respondents.

\*\*The alternate hypothesis is accepted.

The following programs had insufficient number of programs offered to validate the expected value: Occupational nursing services, immunization services, pulmonary screening, annual chest x-ray services, audiology services, CPR/choke training, cancer screening, back pain, blood pressure screening, preventive alcohol/chemical dependence, stress management, weight control, nutritional, smoking cessation, exercise, health assessment and evaluation service, medical director (on site), marriage counseling, alcohol/drug rehabilitation, psychiatric counseling, financial management counseling, employee health records, and centralized billing of service.

## CHAPTER IV

### SUMMARY OF FINDINGS

#### Problem Statement and Objectives

Problems:

- Underutilized resources of hospital has lead to a search for consumers.
- Fulton Industrial firms display a need for health care management including a need to contain rapidly increasing health care costs.

Objectives:

- The purpose is to survey firms located in the Fulton Industrial area and formulate the findings into a description of the marketing system. The marketing system description is to address: company and competitors' marketing strategy; discussion of product characteristics, price, location and other marketing decision variables; marketing channels; buyer behavior; sales and costs.

#### Listing and Recapulation of Acquired Knowledge

- Of the 5470 employees represented by the respondents to this survey, male is the dominant sex.
- Most of the firms are small to medium in size with approximately 75% of the firms employing 100 or fewer employees.
- Firms typically are office/sales or light manufacturing in activity and have been in business for some time.
- The majority of the respondents have experienced a 50% to 100% increase in health insurance costs since 1977.

- A ranking of the perceived major cause for increasing health care costs in decreasing order are: cost of employee benefit coverage; cost of family benefit coverage; worker's compensation; absenteeism; and accident/sick pay.
- The health programs that most frequently fit the category of high or very high interest yet were not offered are: CPR/choke training; back pain; lifting technique; OSHA orientation; and stress management.
- There is no relationship between a firm's insurance cost per employee and an increased interest in health programs.
- There is a direct relationship between the degree of interest and firm size in the following programs: CPR/choke training; lifting technique; executive physicals; back pain; back-to-work evaluation; and chemical dependence.
- There is no relationship between the length of time a firm has been in the area and the level of interest in health programs.
- A positive practical relationship was observed between firm with a written health policy and interest in OSHA orientation and CPR/choke training.
- Firms offering health programs are the most receptive to adding new programs.
- If over 6 percent of total payroll costs are devoted to employee health care benefits a statistically significant relationship was found with high to very high degree of interest in the back pain program.
- Personal interviews support survey findings that: there is a general lack of employer interest in health programs; there is a genuine concern for health benefit costs; and there is a general indication of employee satisfaction with existing health care programs.
- There is a positive practical relationship between the increase in health care costs since 1977 and a high to very high interest in the following programs: executive physicals; back-to-work evaluations; CPR/choke training; lifting technique; OSHA orientation; back pain; and stress management.

- The only occupational categories with a direct practical relationship to health programs are light manufacturing and office/sales. Light manufacturing is directly related to executive physicals, back-to-work evaluations, and lifting technique. The office/sales category of occupations was directly related to executive physicals, exercise programs, and CPR/choke training.
- Interest in health programs has no relationship to the male to female ratio. The exception to this statement is the positive relationship between weight control programs (statistical) and exercise programs (practical) and a male to female ratio that favors females.

#### CONCLUSIONS

The large number of small firms in the surveyed area makes it financially and administratively difficult for the individual firm to independently establish and efficiently operate health programs.

The firms located in the Fulton Industrial area indicated their greatest interest are concentrated in the following programs: CPR/choke training, lifting technique, OSHA orientation, back pain, stress management, executive physicals, pre-employment physicals and back-to-work evaluations. Of these programs, the greatest opportunities for centralized administration are in the CPR/choke training, lifting techniques, OSHA orientation, back pain, and stress management.

Firms in the surveyed area are satisfied with their health programs; however, these firms are not interested in the formulation of their own health programs. Since firms are passive consumers of new health programs, any new program must be developed by occupational health groups and marketed to firms.

### DISCUSSION AND RECOMMENDATIONS

This section will discuss the elements of the marketing system - company and competitors marketing strategy, product characteristics, price, location and the other marketing decision variables: marketing channels, buyer behavior, sells and costs. An action plan will be then formulated.

The elements of the marketing system will be addressed under more general headings which are: the nature of demand; the extent of demand; the nature of competition; the cost structure of the industry; the skills of the firm; environmental climate; and the distribution structure.

#### Nature of Demand

Many Fulton Industrial firms are satisfied with their present health benefits and compensation package. These firms accept the longstanding practice of defining health benefits as some sort of health insurance package. The employer views health insurance as a universal benefit necessary to remain competitive. In other words, the insurance is offered to be competitive, not because the employer feels responsible for the employees health status. Many employers do not feel it is their responsibility to contribute to the good health of employees through health programs.

Though some employers have linked health programs to a reduction in operating costs, most have not. Parkway must assume the responsibility of demonstrating to industry the merits of health programs. It is the opinion of this research group that savings can be realized, but it is difficult to demonstrate because much of

the savings are indirect. Examples of indirect savings are increased productivity through improved attitude, decreased cross-training costs, less absenteeism, and decreased allocation for health care expenditures. Many Fulton Industrial firms cannot justify independent development and operation of these programs even if so inclined. Due to economies of scale and resource availability, Parkway can provide some services.

The various employee health management services must be developed with due consideration to how firms select health care service providers and what health services needs are unsatisfied. Most of the existing services are medical intervention persuant to injury, illness, or requirements of OSHA regulations and law. The need for these services is in sufficient volume so that profit attracts clinics, private practitioners, and hospitals. Convenience of location is important in the selection of the provider by the employer. Being in the vicinity, Parkway could attract some outpatients if it repositions its image to be that of an employer advocate. As an employer advocate, Parkway would curtail work days lost to injury.

The hospital-innovator must actively market these health promotion and intervention services because most firms, as purchasing agents, do not overtly seek information nor are they well informed on the merits of health promotion. Medicine and its modern technology have a significant level of perceived risk. New technology/concepts are best sold and perceived risks are overcome through personal selling. The selling agent must realize that the chief executive officer will be the decision maker but with the

input of others such as the benefits coordinator, personnel director or other associates.

The marketing strategy and agent should be aware that the majority of the Fulton Industrial firms are offices/sales or light manufacturers. They perceive that the predominant cause of increasing health care costs are the cost of employee benefit coverage, followed by family coverage, then worker's compensation, absenteeism, and accident-sick pay.

Program planners and developers must make decisions with regards to market segmentation and the priority for implementing the various services. The market should be segmented by firm size and SIC classification. Programs should be developed targeting offices/sales and light manufacturers with 100 or fewer employees. The highest priority should be given to the services that have the highest perceived unmet demand, the highest profitability, and those likely to assist in image positioning. Though unmet demand is high for CPR/choke training, back pain programs, and stress management, the contribution margin or volume may alter the priority.

Differential costing, as opposed to full cost allocation, is recommended for pricing the various services. The services with the highest contribution margin and projected volume of sales should receive high priority. Investigation of contribution margins and volume may entice Parkway to risk the more capital intense and/or competitive services. This category includes pre-employment physical examinations, trauma care, and so forth.

Services new to the Fulton Area should be evaluated for long term profitability. Three years to achieve breakeven should be acceptable.

Extent of Demand

The research group identified 282 firms employing 10,300 individuals in the Fulton Industrial Area. The 59 respondents (21%) represent 5,470 employees (53%). The target group for employee health management services is comprised of employers with fewer than 100 employees. In the Fulton Industrial Area, 213 of the 282 firms have fewer than 110 employees.

Nature of Competition

The number and type of competitors are many. Fulton Industrial is served by two conveniently located clinics - Boulevard Industrial Clinic and Corporate Center Clinic on Fulton Industrial, and five hospitals - Parkway Regional, Cobb General, Physicians and Surgeons, Southwest Community, and Grady Memorial Hospitals. Fulton is served by three ambulance services - Grady Memorial, Metro, and Williams. The Medical Staff of Parkway and Cobb General vie for pre-employment and on-the-job injuries, along with the clinics.

The clinics have the largest market share and would be a difficult competitor. The clinics are conveniently located. Location is extremely important to those seeking first-aid or treatment for on-the-job injury and is somewhat important in

pre-employment physical examinations. The more successful health promotion programs are convenient to workers.

The clinics market themselves to industry and specialize in this area. Boulevard Industrial and Cascade Industrial Clinic (this clinic is to be phased out) are affiliates of Georgia Occupational Medicine which markets itself as a provider of: complete occupational and safety health programs; on-the-job injuries; pre-employment and executive physicals; surgical specialists, and 24 hour coverage (yellow pages).

In April 1982, the research group studied Georgia Occupational Medicine (GOM). GOM is administratively headed by Larry Benuck, M.H.A. The staff includes three physicians - Doctors Albert Wieldstein, Walter B. Wieldstein, and Mark G. Coan, and two physicians assistants. The physicians rotate through all locations. GOM was operating 5 clinics - Airport/Phoenix Industrial, Boulevard Industrial, Cascade Industrial, Chamblee-Dunwoody, and Peachtree Medical and Surgical Group. Cascade was the oldest, having been open for 18 years. Declining business attributed to noncentral location was the reason for the Boulevard Industrial Clinic. Plans were to close Cascade. Services offered by GOM are: pre-employment physicals, executive physicals, physical therapy, body mechanics, pulmonary screening, x-ray, laboratory tests, and minor surgery. Services provided at the industrial site include audiometric testing, flu shots, and accident prevention seminars. GOM contends that they are different from other providers in that their physicians are

general practitioners and surgeons who follow the patient/employee beyond immediate care. The physicians have admitting privileges at Northside, Shallowford, and Crawford Long. GOM believes the industrial market desires: (1) efficient and quality medical care; (2) reasonable rates; (3) back-to-work evaluations with the employee returning to work as soon as possible. (Note: All providers, clinics and Parkway, have been accused of leniency in approving time off for workers.)

GOM performs most physical examinations on Tuesday and maintains the records on computer. Physical exam results are available on the same day as the exam. The computer record system is not fully developed. The data base includes patient name, date of visit, amount of work time lost, category of injury (forty to choose from); the cost per injury category.

GOM receives some referrals from workman's compensation insurers.

In summary, the medical services market on Fulton Industrial is competitive. The more profitable services are already provided. The competition has the location, marketing, and management skills to respond to new entrants.

Cost Structure of the Industry and Local Demand Cost Structure:

\*Stay Well

- health risk index, interpretation and counseling is \$44 per person
- smoking cessation is \$750 for six 1 1/2 hour sessions
- stress management is \$800 for 5 one hour sessions
- introduction to exercise is \$180 for 4 one hour sessions
- exercise classes are \$900 for 16 one hour classes

(Note: These prices are high for this area.)

\*The Center for Health Studies, Guide To Occupational Health and Health Promotion:

-Back pain is \$25 per visit (1 1/2 visits, 3 days per week for 3 months)

\*Lanier Park Hospital

-Industrial Health Screening Costs

|                                                                                                                                                                                           | <u>Hospital Expense</u> | <u>Per Employee Charge</u> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------|
| Nursing Time                                                                                                                                                                              | \$12.00/hour            | \$15.00 per hour           |
| Booklets & Literature                                                                                                                                                                     | 8.00                    | 10.00                      |
| Cholesterol                                                                                                                                                                               | 2.00                    | 4.00                       |
| Glucose                                                                                                                                                                                   | 2.00                    | 4.00                       |
| Triglyceride                                                                                                                                                                              | 2.00                    | 4.00                       |
| H.D.L.                                                                                                                                                                                    | 4.00                    | 8.00                       |
| <br>-Stress Management (group seminars in the hospital or in industrial conference room): 4 one-hour structured classes conducted by a professional are offered for \$25 per participant. |                         |                            |
| <br>Health Hazard Appraisal (Medical Datamation)                                                                                                                                          |                         |                            |
| 2 page questionnaire                                                                                                                                                                      | 6.00                    | 10.00                      |
| 4 page questionnaire                                                                                                                                                                      | 8.00                    | 12.00                      |

Local Demand:

Raw data is as follows: (Note that the data has not been adjusted for those interested but not responding to the Fulton Area Survey.)

Number of employers (firms) who expressed high to very high interest and . . .

| <u>Program</u>           | <u>Currently offered</u> | <u>Do not offer</u> |
|--------------------------|--------------------------|---------------------|
| Executive physicals      | *69 (14)                 | 51 (12)             |
| Pre-employment physicals | 1604 (13)                | 471 (4)             |
| Back-to-work evaluation  | 2471 (20)                | 72 (3)              |
| Occupational nursing     | 268 (1)                  | 54 (2)              |
| Immunization             | 46 (3)                   | 93 (4)              |
| Pulmonary screening      | 784 (3)                  | 939 (7)             |
| Chest x-ray              | 286 (2)                  | 421 (6)             |
| Audiology                | 763 (4)                  | 1,211 (7)           |
| CPR/choke training       | 1,406 (7)                | 2,452 (23)          |
| Cancer screening         | 0                        | 1,483 (16)          |

|                           |            |            |
|---------------------------|------------|------------|
| Lifting technique         | 1,010 (10) | 1,956 (14) |
| O.S.H.A. orientation      | 1,132 (14) | 1,936 (14) |
| Back pain rehab.          | 111 (3)    | 2,945 (21) |
| Blood pressure screening  | 316 (3)    | 1,456 (15) |
| Alcohol abuse prevention  | 559 (2)    | 1,603 (14) |
| Stress management         | 268 (1)    | 1,733 (22) |
| Weight control            | 0          | 467 (11)   |
| Nutritional programs      | 0          | 184 (8)    |
| Smoking cessation         | 0          | 460 (9)    |
| Exercise programs         | 0          | 166 (17)   |
| Health assessments        | 0          | 252 (10)   |
| Health record maintenance | 0          | 342 (3)    |
| Central billing           | 0          | 28 (1)     |

\*This number represents the number of executives.

#### Resources of Parkway

Parkway Regional Hospital possesses the skills needed to develop and operate health management services, but it must make some changes to be effective. The changes deal with resource allocation and may necessitate the addition of a fulltime coordinator.

Pam Koo in the Guide To Occupational Health and Health Promotion, states that a common mistaken belief is that expertise can be borrowed from one area, on a part-time basis, and applied to the new business opportunity without loss of performance or efficiency in the first area. Parkway must be willing to underwrite the start-up costs for the first three years. Personnel requirements depend on the scope of the program. Parkway is encouraged to develop and organize the program under the supervision of a fulltime coordinator. The coordinator should: report to an assistant administrator; serve as chairman of a multiple disciplinary committee (dietician, physical therapy, respiratory therapy, nurse educator and other disciplines as

needed); develop policies and procedures and communicate them to all participants; conduct industrial site visits to perspective clients; be trained and capable of needs assessments; oversee billing; and serve as a liaison with clerks.

#### Environmental Climate

Several environmental changes must be considered by hospitals-- changes in reimbursement policies, business' attitudes toward costs and physician supply all must be considered. Reimbursement changes are the cause of hospitals seeking alternate revenue services. Underutilized capacity motivates some hospitals. Escalating costs is a catalyst for coalition of businesses. The preferred provider concept is one alternative used by business to decrease health care costs. The oversupply of physicians is one reason for their entry into service markets historically provided by hospitals.

Parkway's strategic plan must be developed with the following factors considered: (1) its facilities are underutilized; (2) the Medical Staff is willing and able to compete for these alternate sources of revenue; and (3) its proximity to Fulton Industrial.

Industrial health management services are an alternate revenue source for Parkway. The marketing plan for these services must be developed in light of this product being in the introductory stage of its life cycle. The product will encounter an environment of employer suspicion. The hospital must develop a plan that will lessen perceived risk. The perceived threat to the Medical Staff

must be considered and the plan must guard against their alienation.

Parkway will have two target markets for its newly developed health management services. The Medical Staff, as one target group, must be convinced that the services will either enhance or have no effect on their practice. The Administrative Staff must assume the responsibility of establishing the role desired for the physicians. Once the role is established the course of action and implementation must be planned and executed. Parkway is advised to avoid the sells approach to marketing and instead should pursue the marketing approach. The marketing approach means that Parkway will assess the needs of its Medical Staff and develop the program accordingly. Likewise, the industrial market's needs must be considered.

The strategy for the industrial market should be developed to reduce the perceived risk and penetrate the new market with the new product which consist of some old services-physical examinations, back-to-work evaluations, and some new services-back rehabilitation and disease and accident prevention. Risk reduction may be achieved through: personal selling; simplification of industrial clients participation (make concepts easily understandable, e.g. provide the client with one name and phone number to contact with problems or for advice); guarantee savings or money back (price competitively, but do not cut prices or give services away); design service so that a firm may purchase only the needed components; provide some free services to those who buy various

services (free services would be CPR/choke training and blood pressure screening); practice on-site visibility and concern; occasionally send worker's compensation physician providers to the industrial site for a walk-through visit.

Distribution

Convenience is key to the success of industrial health management programs. A sufficient number of immediate medical care facilities are located on Fulton Industrial. Parkway may gain a portion of this market by differentiating its product through the addition of wellness programs, management services, and 24 hour service. The success of these wellness programs is influenced by timing and convenience of location.

Parkway is advised to consider convenience, and when feasible, the service should be mobilized to the industrial site. Fixed costs should be limited to equipment that may be used by other patients, salary for a coordinator, and promotion.

APPENDIX A

## Interest in Programs

|           | <u>Program Offered</u> |           |            |           | <u>Degree of Interest</u> |            |           |               |    |    |
|-----------|------------------------|-----------|------------|-----------|---------------------------|------------|-----------|---------------|----|----|
|           | <u>Yes</u>             | <u>No</u> | <u>VH1</u> | <u>H1</u> | <u>Tot</u>                | <u>Mod</u> | <u>Lo</u> | <u>N/Misc</u> |    |    |
| EXECEXMS  | 19                     | 32.2      | 38         | 64.4      | 11                        | 15         | 26        | 9             | 14 | 10 |
| PREEXAM   | 24                     | 40.7      | 34         | 57.6      | 8                         | 9          | 17        | 19            | 12 | 11 |
| BACKWRK   | 26                     | 44.1      | 32         | 54.2      | 11                        | 13         | 24        | 12            | 14 | 9  |
| NURSING   | 3                      | 5.1       | 55         | 93.2      | --                        | 4          | 4         | 18            | 26 | 27 |
| IMMUNIZ   | 7                      | 11.9      | 51         | 86.4      | 1                         | 6          | 7         | 17            | 24 | 11 |
| PLMSCRN   | 5                      | 8.5       | 53         | 89.8      | 3                         | 9          | 12        | 17            | 19 | 11 |
| CHEST XR  | 2                      | 3.4       | 56         | 94.9      | 4                         | 5          | 9         | 18            | 21 | 11 |
| AUDIOOSC  | 5                      | 8.5       | 53         | 89.8      | 3                         | 8          | 11        | 18            | 20 | 10 |
| CPRTRNG   | 7                      | 11.9      | 51         | 86.4      | 11                        | 18         | 29        | 11            | 9  | 10 |
| CANCRSC   | 1                      | 1.7       | 57         | 96.6      | 5                         | 12         | 17        | 16            | 15 | 11 |
| LIFT CLS  | 13                     | 22        | 45         | 76.3      | 11                        | 14         | 25        | 12            | 15 | 7  |
| OSHA OTR  | 17                     | 28.8      | 41         | 69.5      | 14                        | 15         | 29        | 8             | 14 | 8  |
| BCK PAIN  | 3                      | 4.1       | 55         | 93.2      | 10                        | 15         | 25        | 7             | 18 | 9  |
| BLOOD PR  | 4                      | 6.8       | 53         | 89.8      | 8                         | 11         | 19        | 16            | 13 | 11 |
| CHEMDEP   | 4                      | 6.8       | 53         | 89.8      | 5                         | 12         | 17        | 16            | 15 | 11 |
| STRESS SM | 2                      | 3.4       | 56         | 94.9      | 11                        | 13         | 24        | 11            | 14 | 10 |
| WEIGHT C  | 2                      | 3.4       | 56         | 94.9      | 5                         | 8          | 13        | 16            | 20 | 10 |
| NUTRITN   | 1                      | 1.7       | 57         | 96.6      | 3                         | 6          | 9         | 19            | 20 | 17 |
| NO SMOKE  | 1                      | 1.7       | 57         | 96.6      | 5                         | 5          | 10        | 18            | 21 | 10 |
| EXERCISE  | 1                      | 1.7       | 57         | 96.6      | 4                         | 13         | 17        | 15            | 18 | 9  |
| HASSESS   | 1                      | 1.7       | 56         | 94.9      | 2                         | 8          | 10        | 18            | 20 | 11 |
| MEDRCTR   | 1                      | 1.7       | 57         | 96.6      | 1                         | 2          | 3         | 10            | 36 | 10 |
| MRGCNSL   | 2                      | 3.4       | 56         | 94.9      | 2                         | 1          | 3         | 15            | 32 | 9  |
| CHEM RHB  | 9                      | 15.3      | 49         | 83.1      | 6                         | 3          | 9         | 14            | 26 | 10 |
| PSYCNSL   | 5                      | 8.5       | 53         | 89.8      | 4                         | 3          | 7         | 18            | 25 | 9  |
| FIN MGMT  | 2                      | 3.4       | 56         | 94.9      | 5                         | 3          | 8         | 18            | 24 | 9  |
| HLTH REC  | 5                      | 8.5       | 53         | 89.8      | 2                         | 6          | 8         | 12            | 29 | 10 |
| BILLING   | 6                      | 10.2      | 52         | 88.1      | --                        | 8          | 8         | 10            | 31 | 10 |

## APPENDIX B

INTERVIEWS

Selected interviews were added to validate the written survey. The interviews were unstructured to give the respondents the opportunity to volunteer their impressions on three general topics: the interviewee's perceptions of Parkway Regional Hospital, the organization's requirements for new programs, and perceptions of existing health services.

ACD GLASS AND MIRROR

## Organizational Background

\*The company is a relatively small, family-owned business consisting of fifty-five employees. Glaziers, who work at the job site, constitute the major occupational group. The office staff consists of 10 to 15 employees depending upon job scheduling and work load.

## Interview Findings

\*This interview was uninformative for the Personnel Director had few answers to the questions and appeared "uncomfortable" with meeting the interviewer.

\*This small company is primarily a "union shop" where the major portion of its employees are union members and provided for by the union. All benefits, physical examinations, and health

screening (if any) are accomplished by the union. The company has little coordination or input with these health services.

\*The non-union members (office staff) have workers' compensation and a benefit plan with Aetna Insurance.

\*Industrial Clinic (located in the industrial park about 1/4 mile from ACD Glass and Mirror) takes care of all on-site health and emergency needs. Corporate Center Clinic was used previously, but was dropped for unexplained reasons.

#### Findings of Special Note

\*It would be very surprising if Parkway found any means to provide this company with any health services. Management places a low priority on the value of health services and places the burden of health care for most of its workers on the union. The union and company management apparently have little contact when it comes to employee welfare.

AMANA REFRIGERATION**Organizational Background**

\*Amana Refrigeration Southeast is a subsidiary of Amana, Incorporated a manufacturer of refrigerators, freezers and chest-freezers designed for home and office use. The Amana Refrigeration Southeast office located on Tulane Drive is the main office for sales and service for the Southeastern United States and is the factory branch of the parent corporation for manufacturing Amana freezers and refrigerators. Amana Refrigeration Southeast has operated from the same location for approximately twelve years.

**Interview Findings**

\*Amana Refrigeration Southeast presently offers its employees a comprehensive medical and dental plan. A minimum annual deductible is required for all recipients of care. Being a factory-assembler of appliances, the company is familiar with OSHA regulations and requirements. Safety programs are established and running well.

\*Future plans by Amana Refrigeration Southeast do not include any radical changes to the present health care programs. Corporate guidance indicates that the health and medical benefits will stabilize at their present level. The dollar amount will increase as a result of inflation.

**Findings of Special Interest**

\*Accessibility to care for on-the-job injuries is a concern of Amana management. Although their safety record is envious, a local clinic or "emergi-center" for minor mishaps is desired.

BARD OF GEORGIA

## Organizational Background

\*Bard of Georgia is a small privately owned company involved in plastic moldings. The firm employs thirteen individuals.

## Interview Findings

\*Bard uses Corporate Clinic for on-the-job injuries and is satisfied with service. Bard has very few injuries or claims on workers' compensation.

\*Management does not require pre-employment physicals.

\*The level of knowledge and perceived value of health programs:

\*Instruction on proper lifting technique "might be good".

\*Management does not perceive that programs like stress management, smoking cessation are for corporate involvement and sponsorship. The interviewee felt that such programs benefit the employee personally and should be sought on that basis.

\*The Interviewee thought health programs may be able to decrease personnel turnover and absenteeism.

\*Respondant was only vaguely familiar with Parkway but had a favorable impression.

BOUBIEN TESTING AND CONSTRUCTION, INCORPORATED

## Organizational Background

\*Boubien Testing and Construction Engineering, Inc. is a small organization specializing in structural testing and civil engineering for commercial construction and architectural firms. The firm's market area is concentrated in the greater Atlanta vicinity. The firm employs fifteen individuals consisting primarily of civil engineers and persons trained in conducting the required tests and measurements.

## Interview Findings

\*The Boubien Company offers its employees basic medical coverage with a required deductible. Dependents can be added to the policy with the employee paying the additional premium. Routine dental care is also provided for employees and dependents.

\*The nature of the tasks performed by Boubien Testing and Construction Engineering, Inc. requires the employees to work at the construction site. Therefore, few, if any, on the job accidents occur at the Boubien office on Tulane Drive. For this reason the company's management is not interested with on-site or local medical programs or facilities.

\*Future plans at Boubien do not include any changes to the present procedures and benefits for the employees. The management does not appear to be interested in the services offered in the survey.

COLONIAL SHOE CO. INC.

## Organizational Background

\*It is a warehouse-distribution operation privately owned and operated. Located in the area since 1963, there are twenty-five to thirty employees in this warehousing operations.

## Interview Findings

\*The interviewee was cautious about giving any information over the phone despite her request that the interview be done via phone rather than setting up a time to interview.

\*No pre-employment physicals or workers' compensation is administered through a third-party insurer.

\*Emergency service and medical care are administered through Corporate Center Clinic with the level of satisfaction deemed "O.K.".

\*There is a perception of no value in health promotion programs other than back pain program, lifting technique, and accident prevention.

## Findings of Special Note

\*Parkway will have to cater to top management in determining what they can do to help the welfare of Colonial Shoe Company, Incorporated.

CAPITAL FOODS

## Organizational Background

\*Capital Foods is a wholesale grocer firm in the business for distributing meats, produce, eggs, seafood, frozen foods, and sundry items to Atlanta area grocers and food markets. The firm location has not changed in over ten years. Approximately 175 individuals are employed in a variety of warehousing and distribution tasks.

## Interview Findings

\*Capital Foods management is very satisfied with its present medical health system.

\*Pre-employment and back-to-work physical examinations are extensively utilized. Employees can use several sources for these services; however, the firm maintains its own medical record on each employee and stores these records at the company office.

\*Management shows very little interest in expanding present services or entering new areas.

CONTINENTAL CAN CORPORATION

## Organizational Background

\*Continental Can Corporation is the manufacturer of packaging materials for a wide variety of consumer products. Two full shifts of employees are used to fully utilize production capacity and satisfy consumer orders.

## Interview Findings

\*Kemper is the carrier of workers' compensation. Continental Can notifies Kemper of an injury and Kemper accomplishes the remainder of the claims process. Hospital assistance with claim processing is not recognized as a need, because Kemper administers all of it.

\*Workers' compensation claims are a perceived area of concern. Continental Can does have interest in health promotion programs and services that will reduce claims. Even more paramount is there interest in reducing work time lost to injury.

\*Kemper developed canned programs are the extent of Continental Can's safety programs. Management perceives that programs have to be brought to the worksite in order to benefit the workers. Off hour programs would be ineffective since the many workers live in distant locations. Program presentation cannot take a large amount of time away from work time.

\*The company has pre-employment physicals at a downtown clinic. The charge is \$60.00 for a physical examination that includes: audiometric testing, spine examination and physical. Results are obtained immediately with the associated paperwork

following in three days by mail. A change from this procedure would be considered by management.

\*Management has several complaints about Parkway's Emergency Room Staff in reference to on-the-job injuries. Management perceives the doctors are too lenient who grant employees excessive amount of time off. Additionally, there is no continuity of operations. Management encounters problems in obtaining information from the hospital concerning their employees. Management desires the physicians to become familiar with the company's plant and work conditions.

\*Management is unsure of the Corporate Clinic physician qualifications in performing back-to-work evaluations.

\*Management desires a list of referred physicians. The list should include physicians located in south Fulton County, Jonesboro and other south Atlanta areas to reduce employee-patient transit time.

\*Management liked the idea on centralized medical record maintenance.

DUNLOP TIRE AND RUBBER COMPANY

## Organizational Background

\*Dunlop Tire and Rubber Company is the divisional distribution point for automobile and truck tires in the southeastern United States. The warehouse receives, stores and distributes a full range of domestic and import size tires for automobiles, trucks, vans and recreational vehicles for Dunlop and independent tire stores throughout this region of the country. The employee force consists of warehouse personnel and administrative and logistical support staff. Commercial freight carriers are utilized for the actual transport of the material.

## Interview Findings

\*Dunlop Tire and Rubber Company presently offers its employees a full range of medical and dental coverage. The employer pays the premium for the plans. Employees are required to satisfy an annual deductible. The amount of deductible varies dependent upon the number of family members covered.

\*An on-site medical facility is not available. On-the-job injuries are referred to local medical facilities (Parkway Regional Hospital, physician office, or clinic).

\*Future plans at the Dunlop Tire and Rubber Company do not include any radical changes to the employee health benefits. Changes to existing programs require corporate approval.

\*The company is concerned for employee safety and welfare. Safety education and reduction of accident related absenteeism are concerns of the company's management.

HILL AIRCRAFT & LEASING CORPORATION

## Organizational Background

\*A small office staff of approximately fifty employees (mostly out-of-the-office types). The business is one of office-sales (leasing) and is privately owned.

## Interview Findings

\*This interview was with the employee who administers the workers' compensation and benefits but knows little else about the company's health programs.

\*As most employees are sales executives and office staff, their physicals and other programs are conducted by private physicians. No emphasis is placed on pre-employment physicals or back-to-work evaluations.

\*The level of satisfaction is enough to keep management and employees happy; although, the level of satisfaction is not as extensive as it could be.

\*Programs for executive stress management, health promotion and education would be nice, but only if offered on site and at a time convenient to management.

\*There is little need for emergency service other than what is presently provided by the Industrial Clinic and Cobb General Hospital.

\*A newsletter "would be nice" but no perceived benefit on the part of the interviewee was evident.

**Findings of Special Note**

\*Since this is a small operation with few in-the-office employees on a daily basis, Parkway Regional Hospital may find little value in providing services to this group. Emphasis should possibly be directed in making the company aware of services that will be provided and waiting for Hill Aircraft to find value in health promotion services.

PLASTIFLEX COMPANY**Organizational Background**

\*Plastiflex Company is a wholesale distributor of an assortment of plastic products. The inventoried products of this company include flat, clear and colored sheets, rod and tub acrylic plastic, lucite, teflon and other miscellaneous plastic products. The Plastiflex Company concentrates its sales primarily in the Atlanta area, but will accept orders from out-of-state customers. Employees primarily perform light warehousing, administrative and logistical duties.

**Interview Findings**

\*Employees are presently covered with a medical and dental health plan. Dependents are added to the coverage when the employee pays an additional monthly premium. This additional premium ranges from approximately \$8.00 to \$14.00 per month depending upon the number of dependents.

\*Plastiflex does not intend to expand its medical and dental programs in the foreseeable future. The company has an outstanding safety record and stresses accident reduction and elimination to its employees.

\*On-the-job accidents usually consist of minor cuts and scrapes. These problems are usually remedied at the plant site by means of first aid. The company's management shows no interest in on-site medical care or services.

SHONEY'S BIG BOY RESTAURANT**Organizational Background**

\*Shoney's Big Boy Restaurant on Fulton Industrial Boulevard is a franchise operation of a national restaurant chain. Employees are primarily cooks, kitchen workers, waiters and waitresses. This franchise has occupied its present location for approximately seven years.

**Interview Findings**

\*The company does not require a pre-employment physical. Back-to-work evaluations are conducted by the employee's physician of choice. The franchise management consults with the physician prior to the employee returning to work. The insurance company interacts with the employee concerning payment reimbursement.

\*Emergency medical problems are accomplished at nearby clinics during clinic operating hours. "After-hour" emergency cases are transported to local hospitals, including Parkway Regional Hospital.

\*Medical records are maintained by the franchise management.

\*Management is satisfied with the current services and do not plan any expansion of health services.

SIX FLAGS - ATLANTA

## Organizational Background

\*Six Flags-Atlanta is a subsidiary of the parent, Bally Corporation, an organization operating a variety of entertainment and recreation centers. Approximately two hundred and twenty persons are employed full-time in the maintenance and security departments. Four thousand high school and college students are employed during the summer months.

## Interview Findings

\*The personnel coordinator pursues an aggressive effort to provide an efficient and cost effective employee benefit program. She prides herself with the fact she is closely watching claims filed by employees, their dependents, and health care providers. Her efforts have led to a decrease in the number and cost of claims for employee health care.

\*The company currently uses the services of Corporate Center Clinic to handle basic services (primarily pre-employment physicals). The employees who use this center are predominately the 106 maintenance workers and the 30 security guards.

\*Executive physicals, required for the six executives over 35 years of age, are done annually at either the Emory University Clinic or by their personal physician (provided they have the capability to give the extensive physical and have the approval of the coordinator). For those executives under 35 years of age, the physicals are requested on a biannual basis.

\*Back-to-work evaluations are requested for some injuries/illness and may be accomplished by a personal physician (subject to approval), or by physicians with which management has had previous, satisfactory dealings.

#### Findings of Special Note

\*Management is generally satisfied with the program that exists for their employees (compared to other interviewer companies, Six Flags appears to have a more advanced program than most). There is a strong emphasis placed on their employees' health and welfare.

\*Although this company believes it has a comprehensive program for the employees, the coordinator desires to offer a number of new services. These include:

\*Annual pulmonary screening for employment is critical to those working in customer-contact jobs (the bulk of their seasonal group). Physical exams are needed for inhalation areas.

\*Drug/Alcohol Program on a community basis would be beneficial. Although most of the full-timers live outside the immediate service area, it is estimated that 15 and 20% of full-time and 10% of seasonal employees would eventually make use of the service. The coordinator suggests that employees need to begin the program on an individual basis, and as confidence grows, develop group therapy sessions.

\*Back-lifting technique program - instruction in possible injury by lifting improperly is needed. Demonstration and practice of proper techniques are required. Other areas for

inclusion are discussion of degenerative disk diseases, and having a physical therapist available.

\*Smoking Cessation - interest is evident although somewhat limited.

\*Health Assessment - would be a good service for employees if: done on-site at a convenient time, or shuttle service could be provided to Parkway. Price could be used as an incentive (i.e. \$6 to \$7 for blood work; \$5 for physical).

\*Ambulance service that is hospital-based would be of benefit to Six Flags. They have a difficult time getting one ambulance company to respond to their emergency calls. The current price for such service is too high.

\*Parkway does not have a good public image when it comes to emergency service. Management at Six Flags perceives the service is slow plus the patient is confronted with a very high charge when the emergency room is used. The coordinator, as a means to develop good will between Six Flags and the visitor (particularly the out-of-towner) will send the person to another hospital; (Cobb General, for instance) if response time is not critical.

\*A hospital newsletter sent to the employees would be well-received by the employees and supported by management. Distribution on a bi-monthly basis is recommended. It would contain information about health promotion and new medical news.

\*The coordinator perceives fifty percent of Six Flags' employees place value in a variety of health programs. Possible programs of interest would be treatment for emphysema, alcohol abuse, and back problems.

\*Management perceives that their health care costs will be reduced by providing back pain program (treatment and prevention); alcohol abuse rehabilitation, the stress crisis intervention.

\*Six Flags is very conscious of the need to provide a comprehensive health service to its employees. They look forward to seeing what Parkway will undertake to provide services and programs in the areas of promotion, education and cost reduction.

TEE-PAK, INCORPORATED**Organizational Background**

\*Tee-Pak is a branch office with its home office being in Ohio. It employs 40-45 in distribution of packaging.

**Interview Findings**

\*Tee-Pak uses Corporate Clinic for pre-employment physicials and workers' compensation claims. The location and service of Corporate Clinic are satisfactory. There is no interest in changing to another provider.

\*No health promotion programs are offered at Tee-Pak.

\*Interviewee did not desire to respond to the benefits of health promotion programs, because of such programs must originate from the home office.

**Findings of Special Interest**

\*This multifirm company has excellent health benefits and coverage programs. Management of all benefits is the responsibility of the corporate office in Ohio. Administration of the program is a local responsibility.

YANCEY BROTHERS**Organizational Background**

\*Yancey Brothers employs two hundred individuals on a full time basis. The nature of the firm encompasses the sales and rental of heavy machinery and the warehousing and distribution of repair and maintenance parts. Five percent of the employees are involved in sales and similar number are employed for clerical and administrative duties. The remainder perform manual semi-skilled warehousing and mechanical work.

**Interview Findings**

\*The firm provides no on-site nursing service but trains certain employees in first aid treatment through a Red Cross Program.

\*Currently they use the services of: Corporate Center Clinic for pre-employment and back-to-work physicals. They charge \$20.00 per patient encounter.

Fulton Industrial Clinic is also used.

\*Most workers' compensation claims go directly to the insurance company; therefore, personnel has very little control over the cost of claims or the frequency of claims filings.

Medical claims come primarily from dependents of employees rather than employees themselves. These claims include pediatric care, long term treatment for cancer and mental illness of dependents.

\*Management is generally satisfied with the present system; although, some improvements would be in order. One suggestion is

to reduce the number of times an employee is required to visit the clinic. Repeat visits seem excessive to management.

\*One incident involves Parkway Regional where an employee was sent to have a cut finger sutured. The employee was attended to and referred to the clinic for followup. Infection occurred much to the dissatisfaction of the safety supervisor.

#### Findings of Special Note

\*This company is in close proximity to Parkway; however, due to a poor public image and "aggressive" marketing of the two clinics mentioned above; Yancey Brothers makes little use of the hospital. If Parkway could out-perform the clinics, they could obtain a sizeable, yet undertermined, share of Yancey's health care business.

\*Developing a rapport with Yancey will have to start with offering one or two services, doing them well, and subsequently hoping to provide health programs to their employees by gradually strengthening programs.

UNITED PARCEL SERVICE

## Organizational Background

\*United Parcel Service is a national firm specializing in the distribution of packages between business, home and combinations of these. Recently, this firm has entered the air freight market. The local branch office provides its service to the metropolitan Atlanta area and surrounding rural and suburban areas. Employees are primarily engaged in truck driving or distribution warehousing.

## Interview Findings

\*Management is keenly aware of health promotion programs and has examination rooms where physical examinations are conducted on site by Emory students. Management is pleased with this arrangement. Laboratory work is a possible market.

\*UPS has developed preventative programs with computer storage of detailed accident reporting. They have a full-time safety director. Liberty Mutual is involved with safety programs development which is presented on-site in their classroom.

\*Management is very price conscious.

\*UPS uses Parkway's Emergency Room. They are satisfied with the relations and communication they have with the Emergency Room Staff.

\*UPS is open to new programs; however, acceptance is on a cost-benefit analysis basis.

\*There is some interest in an employee assistance program.

\*Management perceive the hospital could market clinical services (i.e. occupational nursing) to companies which are too small to individually afford these services.

## INTERVIEW CONCLUSIONS

The general conclusion is that the interviews give subjective support to the survey. Both methods, of data gathering showed general lack of interest in health programs; however, both methods had exceptions with some firms showing strong interest. Both methods indicated a concern for costs. Additionally, both revealed a general satisfaction with existing health care. The interviews provided subjective validation to the written survey.

APPENDIX CGLOSSARY

AUDIOLOGY SCREENING: a service which measures the level of hearing acuity, particularly among workers being exposed to above-average levels of noise at work. Audiological screening is used for pre-placement of workers in noisy jobs, to determine susceptibility to hearing loss, and as a reference point for evaluating future change in hearing acuity. This screening process may also be used for diagnostic purposes such as hearing loss from other causes.

BACK PAIN PROGRAM: the result of no instruction in proper lifting technique, chronic back conditions, and injury on the job. Such a program is a treatment made for living with and/or rehabilitating a back pain problem. Treatment may be in the form of physical therapy, analgesic prescriptions, exercise programs, simply learning to adjust to a chronic pain problem.

BACK-TO-WORK EVALUATIONS: an evaluation or examination done on an employee after absence from work due to sickness or injury. The evaluation is used to ensure the employee is fit to undertake his/her usual occupation upon returning to work. The evaluation may determine the employee to not be completely fit and thus recommend an assignment to another job on a temporary or full-time basis. Regardless of an examination by the employee's personal physician, one performed by the company's medical staff may be advised.

BLOOD PRESSURE SCREENING: a cost effective means of monitoring potential cardiovascular illness. The prevalence of treatment for hypertension, heart disease, and stroke indicates the need for greater preventative measures. Screening the entire work force on a periodic (perhaps annual) basis has proven an effective measure and improves the chances for avoiding future complications. Blood pressure screening is an essential element to any company health program.

CANCER SCREENING: a comprehensive screening process by which the employee is examined for potential or existing carcinoma. Emphasis of the examination may vary among employees but will concentrate mostly on body areas that are prime sites for cancer according to sex, age, and occupation.

CARDIOPULMONARY RESUCITATION (CPR) / CHOKE SAVING TECHNIQUES: a very essential component of the occupational health program, CPR/Choke Saving education is provided to employees on a voluntary basis by the firm. Such techniques are provided as a preventative measure should the need to save a fellow employee arise. Essentially CPR is the technique used to restart cardiopulmonary functions until the employee is stabilized in a health facility or attended to by professionals. Choke Saving Technique discusses the alternative methods used on choking victims of various ages.

CHEST X-RAY SERVICES: a diagnostic service provided to employees and used to screen for occupational disease and/or overt and latent chest disease (i.e., tuberculosis, sarcoidosis, carcinoma). The service may be provided on site (as in a company facility or mobile unit) or at a central location within easy access to the industry.

EXECUTIVE PHYSICALS: a comprehensive health examination for company executives, usually required for insurance and/or business reasons. Exam normally encompasses three (3) areas: undetected disease screening, clinical exam, and environmental assessment. Coronary risk problems, normally a regular basis, done on older (45+) executives.

EXERCISE PROGRAM: as management realizes the importance of a balanced life-style, support of company-wide exercise programs will grow in numbers. Studies are proving the value of daily exercise in terms of improved cardiovascular system, reduced stress, improved productivity, morale and, a more positive attitude towards the employer and company, in general. Whether the exercise program be located on-site or in a central location will vary with each company and management support. Nonetheless, management has experienced lowered workers compensation claims, absenteeism, and chronic illnesses when an exercise program has been actively supported.

HEALTH ASSESSMENT PROGRAM: the purpose of this program includes the surveillance of health status, the identification of latent or hidden disease, and screening for a specific type of disease. For the individual employee such an assessment would begin with the medical history and a physical examination. In addition to examining physical conditions, evaluation of the employee's lifestyle (nutrition, sleep, exercise, hygiene) are included in making a final assessment of health. Frequency of assessment will vary with age, ranging from every 5 years (<35 years) to annually (45+ years). The essential component of this and any health evaluation program is follow-up case and assessment. Without this, health promotion will never exist in the program.

IMMUNIZATION SERVICES: the service of providing employees (and their dependents) with immunization as a treatment and/or preventative measure against disease. Such immunization may be work related as a means to combat transmission of disease among employees in the work place.

MEDICAL DIRECTOR (on site): utilized particularly in large industrial worksites, such an individual will be responsible for coordinating health assessment, care, and followup of those employed in the health promotion program. The Director is typically from a medical background (such as a physician) and employed by one company or a conglomerate of businesses in close proximity. An essential employee for those companies that are serious about their employee's health.

OCCUPATIONAL NURSING SERVICE: The applying of nursing principles and practices to workers in all occupations and in all work environments. Such a service entails prevention, recognition, and treatment of an illness & injury while also requiring special skills and knowledge in the fields of health education and counseling, environmental health, rehabilitation, and human relations.

OSHA ORIENTATION PROGRAM: instruction encompassing standards and practices contained in the Occupational Safety and Health Act (OSHA), Toxic Substances Control Act (TOSCA), and other pertinent regulatory standards. Purpose is to instill safe work practices in employees as a habit rather than be viewed as contrary to their benefit.

PRE-EMPLOYMENT PHYSICALS: an examination given to new employees prior to their formal employment for the purpose of screening existing of potential health problems. These newly detected problems may influence the employee's ability to perform on the job or may be transmitted to other employees in the workplace. Used in proper job assignment. Used to establish history of medical problems in settling workman compensation abuse.

PREVENTATIVE ALCOHOL AND CHEMICAL DEPENDENCE PROGRAM: directed at both those employees with an admitted substance abuse problem and at those who are unaware of a potential problem. The program may approach the identified illnesses in a variety of treatment modes depending on the individual(s) involved, the type of problem, and the level of support given by each participating company. Treatment and counseling must be an ongoing process.

PROPER LIFTING TECHNIQUE: instruction as to the technique's for lifting objects of any size, shape, and weight in a proper manner and without placing undue stress on the body's muscles. Particularly important in today's work sites regardless of the physical nature of the work. Back injuries due to improper lifting is a primary cause of compensation claims, absenteeism, and long-term disability.

PULMONARY SCREENING: an examination administered on a company-wide or individual basis for evaluation of pulmonary function among employees. Screening is used to detect any asymptomatic lung diseases, particularly those that may be transmitted within the work place. Annual screening for tuberculosis prevention in service industries (consumables; person-contact).

SMOKING CESSATION PROGRAM: one of the more popular health promotion programs, employees are given the motivational tools to decrease or completely stop their smoking. Strong peer reinforcement and encouragement is necessary and proven most effective for "hard core" smokers. With the incidence of smoking-related diseases at acute levels, such a program may well be the most cost effective programs to date.

STRESS MANAGEMENT PROGRAM: provided to employees in all work settings as a preventative measure against stress-related illnesses (hypertension, stroke, gastrointestinal disease, etc.). Designed to identify all potential stress-producing factors in our lives and to understand how stress is manifested in physical forms. Once identified, the employee will come to understand techniques for dealing with stress and how to channel the energy into creative and healthy pursuits.

WEIGHT CONTROL/NUTRITIONAL PROGRAMS: responding to a strong need among our nation's workforce (large percentage of employees in excess of recommended weight), this program educates the employee to maintain a nutritionally balanced, personal diet. Therapy modes may take the form of individual counseling and monitoring and/or group effort on a company-wide basis. Reward system may be incorporated into program with management providing the additional incentive.

Questa

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## AFIT RESEARCH ASSESSMENT

The purpose of this questionnaire is to ascertain the value and/or contribution of research accomplished by students or faculty of the Air Force Institute of Technology (ATC). It would be greatly appreciated if you would complete the following questionnaire and return it to:

AFIT/NR  
Wright-Patterson AFB OH 45433

RESEARCH TITLE: An Analysis of the Fulton Industrial Area: A Market for Parkway's Industrial Medicine Program

AUTHOR: Thomas D. McKinney

## RESEARCH ASSESSMENT QUESTIONS:

1. Did this research contribute to a current Air Force project?

a. YES  b. NO

2. Do you believe this research topic is significant enough that it would have been researched (or contracted) by your organization or another agency if AFIT had not?

a. YES  b. NO

3. The benefits of AFIT research can often be expressed by the equivalent value that your agency achieved/received by virtue of AFIT performing the research. Can you estimate what this research would have cost if it had been accomplished under contract or if it had been done in-house in terms of manpower and/or dollars?

a. MAN-YEARS  b. \$

4. Often it is not possible to attach equivalent dollar values to research, although the results of the research may, in fact, be important. Whether or not you were able to establish an equivalent value for this research (3. above), what is your estimate of its significance?

a. HIGHLY SIGNIFICANT  b. SIGNIFICANT  c. SLIGHTLY SIGNIFICANT  d. OF NO SIGNIFICANCE

5. AFIT welcomes any further comments you may have on the above questions, or any additional details concerning the current application, future potential, or other value of this research. Please use the bottom part of this questionnaire for your statement(s).

| NAME | GRADE | POSITION |
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STATEMENT(s):

END